

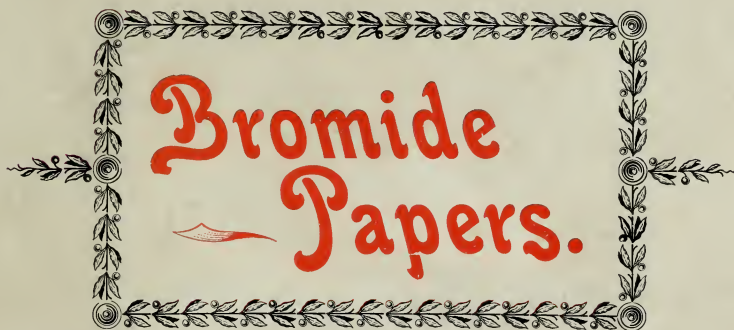




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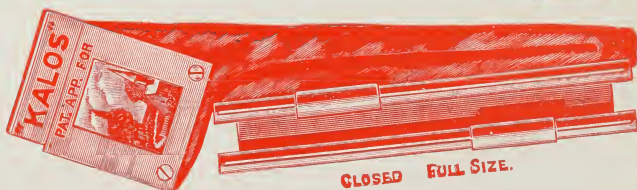
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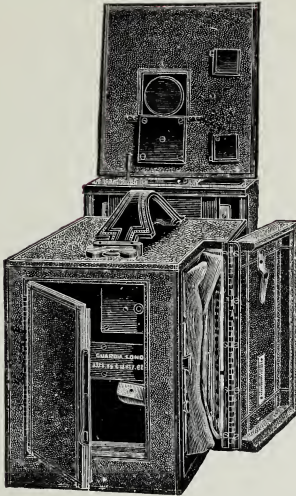
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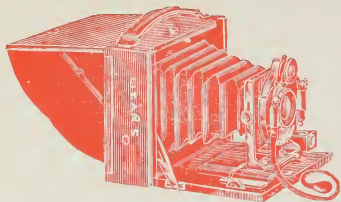
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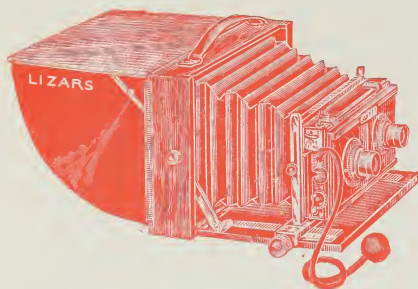


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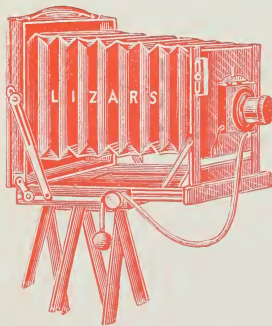


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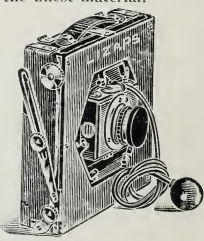
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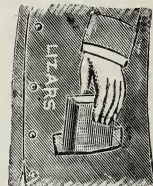


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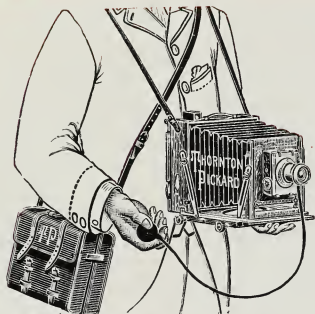
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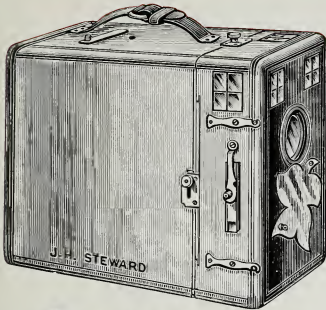
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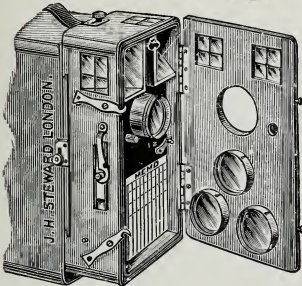
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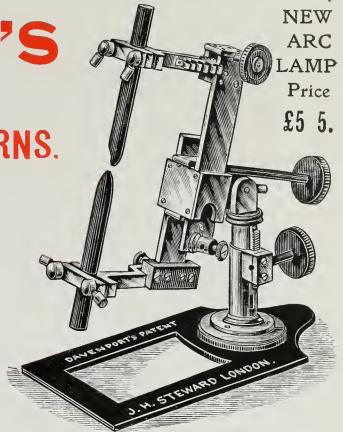
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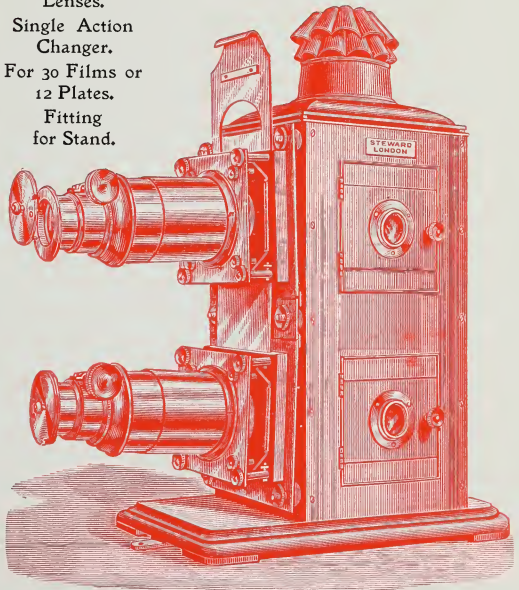
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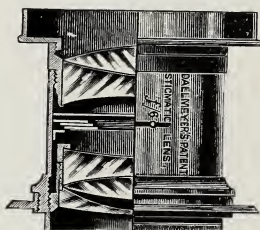
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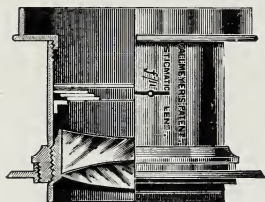
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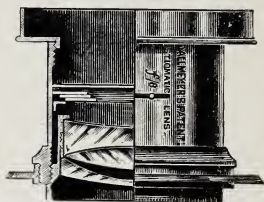
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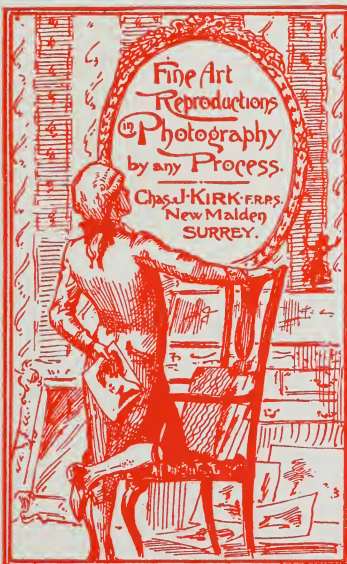
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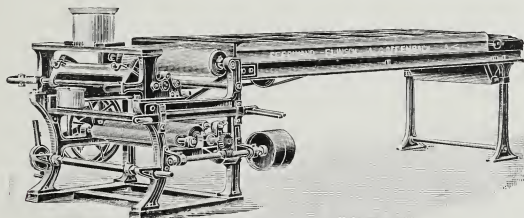
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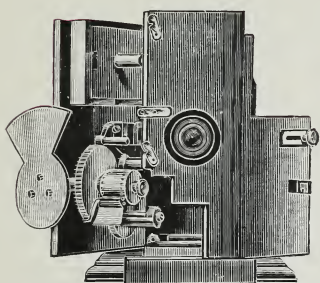
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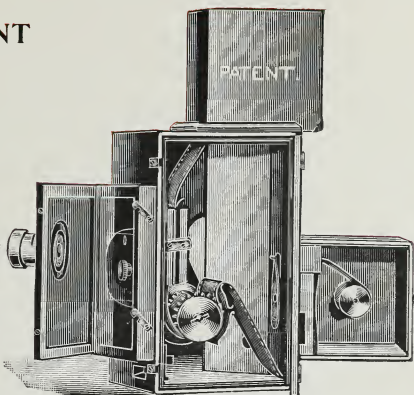


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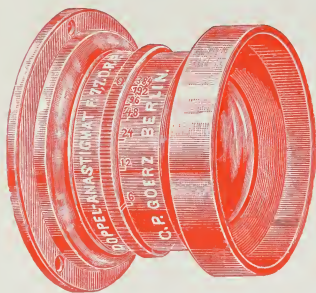
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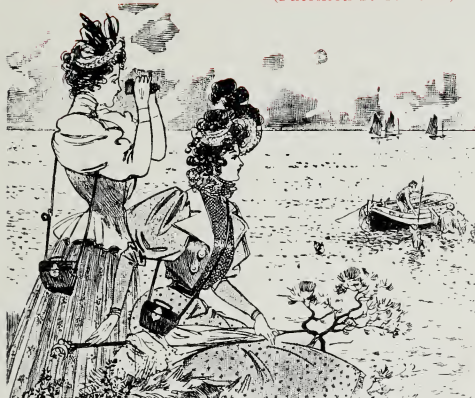
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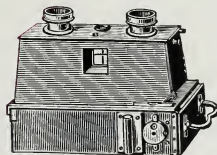
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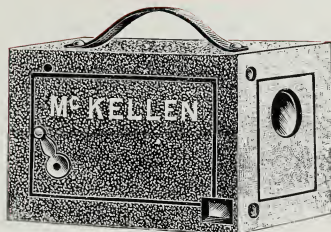
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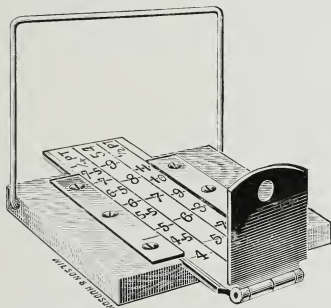
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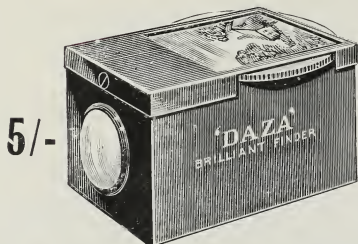
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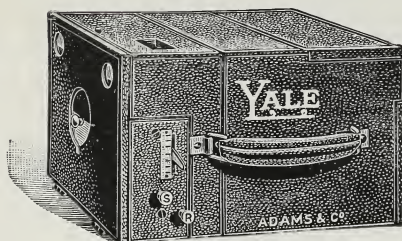
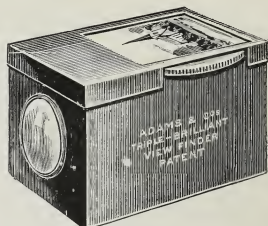
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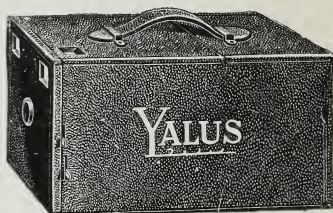
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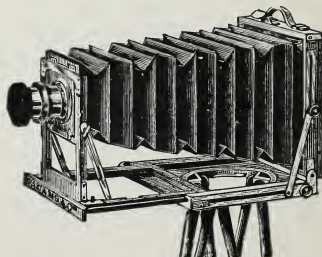


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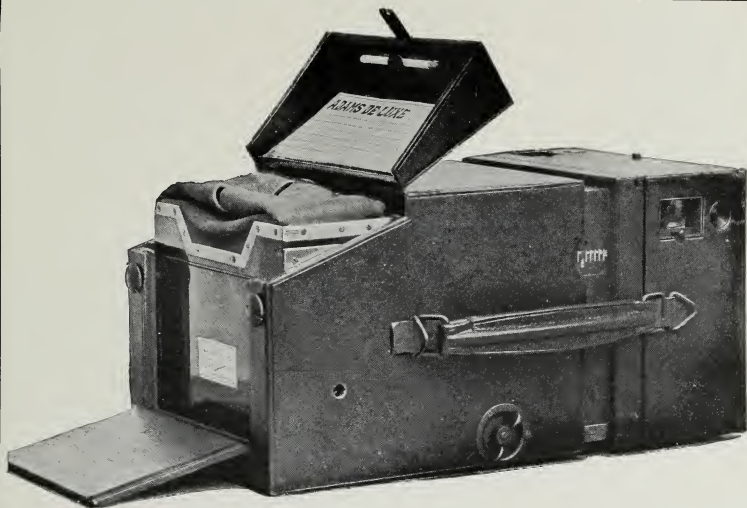
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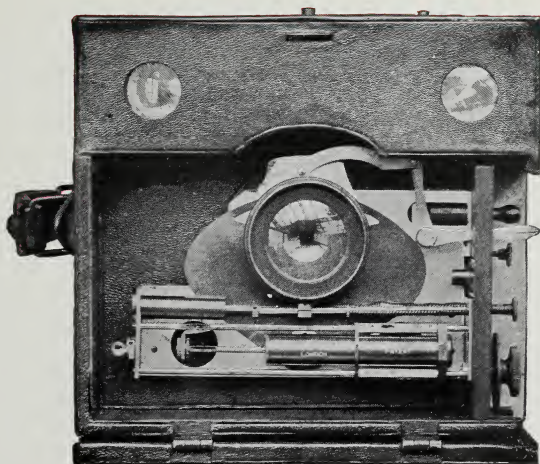
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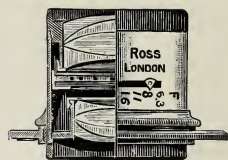


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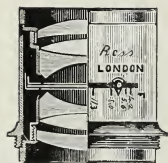




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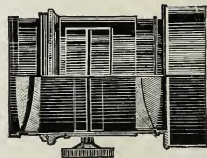
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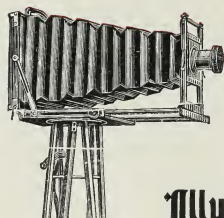
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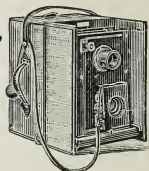
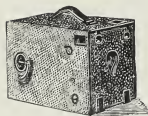


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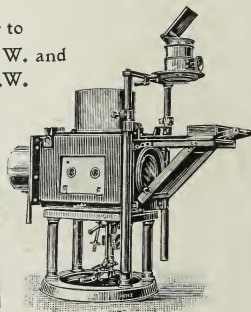
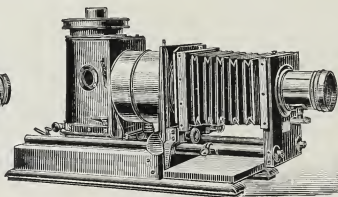
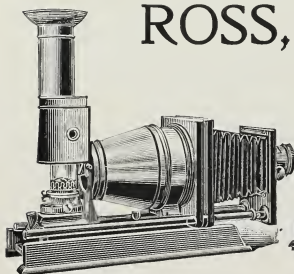
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1898.

Opened by His Royal Highness the Prince of Wales, K.G.
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London : Royal Photographic Society.
1898.



Preface.



An attempt has been made to render the catalogue something more than a mere string of names and numbers. To do this, many members of the Society, members of the trade and others have given valuable assistance, without which the task in the short space of time available would have been impossible. It is the pleasant duty of the Editor to express his most hearty thanks to those who have assisted in this direction.

The general arrangement of the Exhibition is such that the visitor arriving by the L. C. & D. R., entering the Palace through the subway (the Secretary's office immediately adjoins this entrance on the right), and turning to his left will first reach the Historical Collection in the Egyptian Court. Beyond this lie the sections devoted to Photography in its Scientific Applications, Photography in Colours, and Photography as a Science, in the Egyptian and Roman Courts. Passing on through the Alhambra Court to the end of the Palace and turning to the right until the fountain is reached, and then turning to the right again, the whole length of the north and south naves will be faced, containing in order, on the left the Photographic Record Collections, on the right the Affiliated Societies' Photographs, then the Pictorial Loan Collection, the Prince of Wales' Hospital Fund Exhibit, and beyond these the section devoted to the Apparatus and Technical Sections. These occupy the greater portion of both naves, faced in the north nave by the General Photographic Exhibits on the screens and alcoves. The Photographic Journals are at the north end of the north nave, and most of the Process firms at the south end of the south nave.

R. CHILD BAYLEY,

Editor.

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The Royal Photographic Society.

Offices :

12 HANOVER SQUARE, LONDON, W.

Many requests having been made for information concerning the Society, the following short account of its constitution and work has been drawn up. Should there be any detail upon which further information is desired, the Secretary will be pleased to supply it upon application to him at the Society's offices.

The Royal Photographic Society was founded in the year 1853, under the title of "The Photographic Society of London," which, in 1874, was changed to "The Photographic Society of Great Britain," and in 1894 was further modified, by Her Majesty's commands, to "The Royal Photographic Society of Great Britain."

The objects for which the Society was established may be summarized in the phrase "the advancement of photography."

Meetings for the reading and discussion of papers are held in the Society's rooms on the Second, Third, and Fourth Tuesdays in each month, from October to June inclusive; those on the Third Tuesdays being specially devoted to photo-mechanical processes.

An Exhibition is arranged every Autumn—for many years it has been held in Pall Mall—at which are included selected photographs of every kind, and new appliances.

The Society's Journal is published monthly, and includes abstracts of the most important photographic work throughout the world. The Library of the Society consists of more than 1,200 volumes, and the Museum is rapidly increasing in interest.

The Society consists of three classes of Members—namely, Ordinary Members, Fellows, and Honorary Fellows. Anyone who is interested in either the science or the art of Photography is eligible for election as an Ordinary Member. The Fellowship, on the contrary, is open only to those Members who are able to satisfy the Council that they have ability in one or other of the many branches of the subject, and they have a right to place the letters F.R.P.S. after their names, as an indication that their ability has been acknowledged by the Society.

Members pay upon election an entrance fee of One Guinea, unless they have been members of an Affiliated Society for at least two years. An annual subscription of One Guinea is payable by Ordinary Members, and Two Guineas by Fellows, and in both cases future subscriptions may be compounded for by a single payment of Ten Guineas or Twenty Guineas respectively. But Members elected during the latter half of the year are liable for One Guinea only, which is held to include both the entrance fee and the first year's subscription.

Members have the right of attending all meetings of the Society, and of introducing two visitors to each; they have free admission to the annual Exhibitions of the Society, a number of tickets for their friends, and additional tickets that they may require at half-price. No charge for wall space is made to Members of the Society. They receive gratis all publications of the Society, have the free use of the dark room, library, and laboratory, as well as of numerous other dark rooms in this country and abroad.

A nomination form is attached, which should be filled up with the name and address of the Candidate for election, and signed by two Members of the Society. Candidates who are not acquainted with any Members should communicate with the Secretary at the above address, who will be glad to do his best to arrange for their introduction.



Royal Photographic Society of Great Britain.

*being desirous of admission into the ROYAL PHOTOGRAPHIC SOCIETY,
We, the undersigned, propose him as a proper person to become a Member
thereof.*

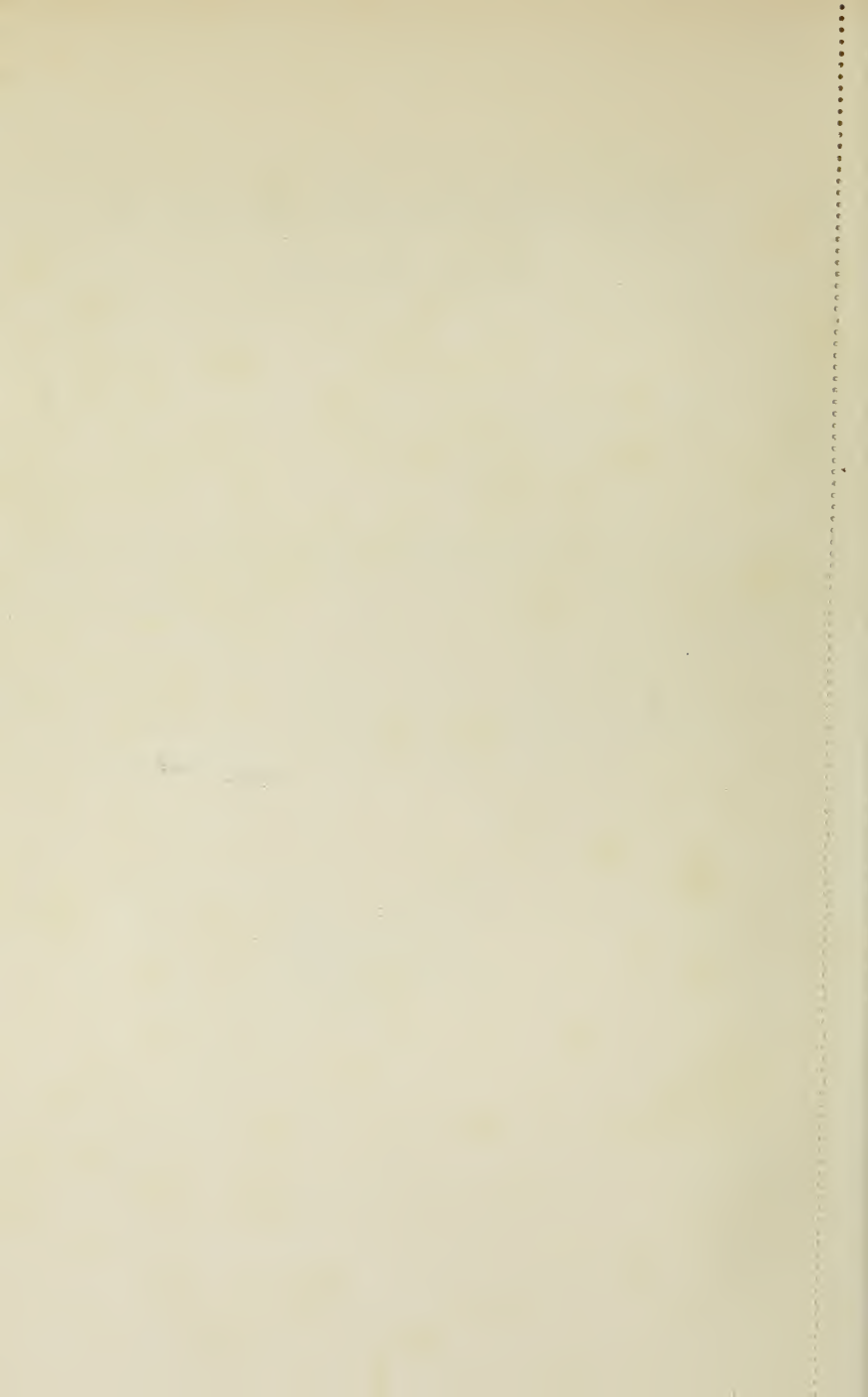
Witness our hands this *day of* *189*

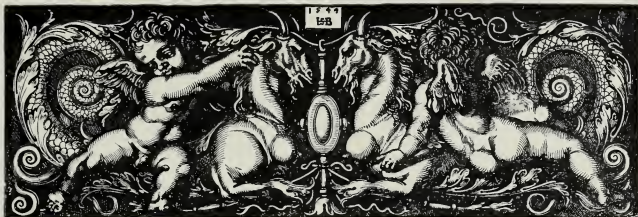
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Historical Section.

PORTRAITS.

A collection of photographs, etc., of well-known photographers, deceased, to whom much of the present position of photography is due. The bulk of these form part of a collection which the Society has been forming during the last few years, for which purpose the originals have, in most cases, been copied by Mr. H. T. Malby.

N.B.—The date after the name thus, Daguerre (1845), indicates when the portrait was taken.

1 Joseph Nicéphore Niépce.

Born at Chalon-sur-Saone, 7th March, 1765, served in Italy 1793, brought out several mechanical and hydraulic inventions, and in 1813 turned to lithography. Discovered the sensitiveness of bitumen, and in 1822 obtained copies on tin by its aid. Obtained the first camera picture, 1824. Came to Kew, September, 1827, and submitted to the Royal Society through Francis Bauer, a paper upon and specimens of his work (some of the specimens referred to can be seen in the Exhibition). The process being a secret one the paper was declined. Entered into agreement to co-operate with Daguerre in working out a photographic process, December 4th, 1829, which led to little. Died 5th July, 1833.

2 Louis Jaques Mandé Daguerre. Royal Photographic Society.

L. J. M. Daguerre, was born at Cormeilles near Paris, in 1787. He earned his livelihood as a painter, making a name for himself with the diorama, into which he introduced many new features in the way of lighting, &c. He seems to have turned his attention to the camera about 1824, but the process which bears his name was only published in 1839. In 1829 he had entered into an agreement with J. N. Niépce, to the effect that the two investigators should impart their discoveries to one another, sharing equally in any pecuniary results. The agreement on the death of Nicéphore Niépce was transferred to his son Isidore. Daguerre died in 1851, and was buried at Bry-sur-Marne.

- 3 Daguerre (1845). J. A. Forrest.
- 4 Daguerre. Royal Photographic Society.
A c rystallotype by J. A. Whipple, 1855, lent by E. Clifton to the Royal Photographic Society's Museum.
- 5 Daguerre. William Lang.
Enlargement by Nadar of Paris.
- 6 Daguerre. Royal Photographic Society.
Holograph of Daguerre, presented to the Society by F. Haes, Esq., being supplementary instructions for daguerreotyping. The document was received by Mr. Haes in December, 1891, from the widow of Dr. L. Loewe, who received it from Daguerre in 1840. Dr. Loewe learned daguerreotype from Daguerre in that year in Paris, when on his way to Palestine.
- 7 Eight Photographs. Memorials of Daguerre and Nièpce. William Lang.
 - (a) Tombstone of Daguerre, Bry-sur-Marne.
 - (b) Gate of Daguerre's House.
 - (c) Painting by Daguerre in Church at Bry-sur-Marne.
 - (d) Artificial Grotto—Memorial of Daguerre in garden of Baron Louis.
 - (e) Monument to Daguerre at Corneilles-en-Parisis.
 - (f) Inauguration of Daguerre at Corneilles-en-Parisis.
 - (g) Statue of Nicephore Nièpce at Chalons-sur-Saone.
 - (h) Inauguration of Statue of Nicephore Nièpce at Chalons-sur-Saone.
- 8 Frederick Scott Archer. Royal Photographic Society.
Born at Bishop Stortford, in 1813. He practised as a sculptor and photographer at 105 Gt. Russell Street, W.C., where he died in May, 1857. His greatest claim upon photographers lies in the fact that he was the discoverer of the collodion process, the details of which he published in the *Chemist*, in March, 1881, although this was by no means his only achievement as a photographic investigator.
- 9 Andrew Ross. T. R. Dallmeyer.
Born in London, 1798. Educated at Christ's Hospital. Worked in Gilbert's instrument-making establishment, of which he became manager, and met there Professor Barlow. Starting for himself as an optician, most of his time was given to dividing astronomical and mathematical instruments, for which he invented a circular dividing engine. Introduced improvements in microscopic objectives, in telescopes, invented the spherometer, made the first lenses specially constructed for photography (one of the first may be seen in the Exhibition), although the inclusion of photographic manufactures in the products of the firm was due to the influence of his son Thomas. Died September, 1859.
- 10 Sir David Brewster. (1849.) R. C. Murray.
Born December 11th, 1781. Edited the Edinburgh Encyclopædia, became LL.D. 1807. He invented polyzonal lenses 1812; gave much attention to the polarization of light, and was awarded the Copley Medal. Invented the kaleidoscope, 1813. Principal of Edinburgh University, 1859. President of the Photographic Society of Scotland, 1856. Author of *The Stereoscope*. Died February 10th, 1868.

- 11 Letter of Sir David Brewster. William Lang.
This refers to the Albumen Process of Niepce de St. Victor.
- 12 Antoine F. J. Claudet, F.R.S. J. Spiller.
Born at Lyons, 1797. Invented in 1833 a machine for glass-cutting, took up photography 1840, discovered the accelerating influence of chlorine and bromine on the daguerreotype plate. Died December 27th, 1868.
- 13 Roger Fenton (1869). J. Spiller.
Born in 1819. He took an active interest in photography, and a prominent part in the institution of what is now the Royal Photographic Society, of which he became the first Honorary Secretary, in January, 1853. He was appointed Official Photographer in the Crimea; many of the photographs there taken can be seen in the present Exhibition. He became a Member of the Bar, and subsequently connected with the Stock Exchange. Died August 8th, 1869.
- 14 Abel Niepce de St. Victor. William Lang.
Born at St. Cyr, July 26th, 1805. Nephew of Nicephore Niepce. The first practical photographic method on glass was his albumen process, which was published in 1848, and which was at once recognised as a valuable step in advance in the direction of delicacy and detail. He subsequently turned his attention to heliography, employing silvered plates, and devised a method of photo-engraving with bitumen of Judea. Specimens of his results are to be seen in the Exhibition. Died April 7th, 1870.
- 15 Sir F. Pollock, Lord Chief Baron (1844). J. Spiller.
Senior Wrangler, 1806. Called to the Bar, 1807. Elected F.R.S., 1816. Became Chief Baron of the Exchequer, 1844. President of Photographic Society from 1855 to November, 1868. Died August 22nd, 1870.
- 16 Rev. J. B. Reade, F.R.S. (1870.) J. Spiller.
Born April 5th, 1801. He obtained photographs with the solar-microscope as early as 1837; in 1839 he discovered the utility of an infusion of galls in increasing the sensitiveness of the silver paper he was using, but missed detecting the developing action which took place. Elected F.R.S. in 1838. Was President of the Royal Microscopical Society, and Vice-President of the Photographic Society. Died December 12th, 1870.
- 17 Sir John Herschell by Mrs. J. M. Cameron. William Lang.
Born March 7th, 1792. His career, which was a most distinguished one, belongs to astronomy rather than to photography. Discovered the solvent action of the hyposulphites on silver salts, 1819. The ferro-prussiate processes are largely due to him, and he investigated the light sensitiveness of the salts of gold, platinum, and mercury. Died May 11th, 1871.
- 18 Thomas Sutton, B.A. J. Spiller.
Born September 22nd, 1819, and took his degree (27th Wrangler) at Cambridge, 1846. Published with Blanquart-Evrard, in 1854, *Souvenirs de Jersey*, illustrated with prints from paper negatives by Sutton. In 1856 he started *Photographic Notes* which he edited until it was merged in *The*

Illustrated Photographer in 1868, which had but a short existence. He was one of the first to recognise the merit of Pouncy's carbon process, being always an advocate of permanency. In 1861 he was appointed Lecturer on Photography at King's College, in succession to Mr. Hardwich, but he resigned the position after a few months. His panoramic lens and camera are described elsewhere; he devised also a symmetrical triplet. His moist plate process employing glycerine was well known at the time. Died at Pwllheli, March 19th, 1875.

- 19 Henry Fox Talbot. Frank P. Moffat.

H. F. Talbot, of Lacock Abbey, Chippenham, was born in 1800. He turned his attention to the camera in 1833, and early in 1839 published a description of the Calotype or Talbotype process of which he was the inventor. The process underwent little improvement at the hands of others, and survived the introduction of collodion many years for landscape work. Talbot then turned his attention to photo-engraving, and worked out a process of etching intaglio plates, which is the basis of modern photogravure methods. He did also much scientific work in connection with photographic processes. He died September 17th, 1877. We are indebted to his son C. H. Talbot, for some of the interesting exhibits, which will be found below. (See also the Sub-section devoted to photographic engraving).

- 20 Friedrich von Voigtlander. Col. Waterhouse.

Born in Vienna in 1812. Well known as an optician, associated with Professor Petzval in the introduction of the portrait lens. Died at Brunswick, April 7th, 1878.

- 21 Peter le Neve Foster, M.A. J. Spiller.

Born in 1809 at Lenwade, Norfolk. Was 38th Wrangler in 1830, called to the Bar 1836, and became Secretary of the Society of Arts, 1853. He took a prominent part in the Exhibition of 1851, and was one of the founders and a member of the first Council of the Photographic Society. Died February 20th, 1879.

- 22 Oliver Francois Xavier Sarony. J. Spiller.

Born of Prussian parents at Quebec, 15th February, 1820. Settled as professional photographer at Scarborough, 1857. Introduced the photo-crayon style of portrait work, 1869. Died August 30th, 1879.

- 23 George Wharton Simpson, M.A. Mrs. William Black.

Born in 1825. Received the training of a Journalist, and became Editor of the *Stockton and Darlington Times*. The preparation of a manual on photography led to a connection with the *Photographic News*, of which in 1860 he became part proprietor, and editor and sole proprietor in 1868. His best known original work in photography lay in the invention of a printing out process employing collodio-chloride. His experiments in photographs in colour by printing under coloured glasses were interesting. Died 15th January, 1880. We are indebted to his daughter, Mrs. William Black, for the loan of the two portraits exhibited.

- 24 Mungo Ponton. Royal Photographic Society.

Born in 1801. He discovered in 1839 the sensitiveness of bichromated gelatine to light, a quality which is taken advantage of in almost all pro-

cesses of photo-mechanical reproduction, in carbon printing, and in Woodbury-type, and its modifications. Died at Clifton, August 3rd, 1880.

25 Louis Alphonse Poitevin.

Leon Vidal.

Born at Conflans, Sarthe, 1819. Trained as a chemist and engineer, was appointed in 1843 as chemist to the Salines National de l'Est. Into the methods worked there he introduced numerous improvements and inventions of his own. Published in 1848 the process of electrotyping the daguerreotype image, and later a method of photo-engraving on silvered or gilt metallic plates. Patented in 1855 the helio-plastic process (casting in plaster from a gelatine-bichromate relief). Discovered the fatty-ink process, the basis of collotype, and of photo-lithography, and in 1862 introduced a form of carbon printing. He also investigated the ferro-prussiate and dusting-on methods of printing. Died March 4th, 1882.

26 Dr. D. van Monckhoven.

Born at Ghent, 25th September, 1834. Author of *Traite Générale de Photographie* (1854?), and other works on photography, the best known of which to English readers is *Photographic Optics* (1867). Much of his time was given to improving the collodion process, carbon printing and solar enlarging. He was the first to employ ammonia to increase the sensitiveness of gelatine emulsion; devised a process of emulsifying without washing by the employment of silver carbonate and hydrobromic acid, and conducted an extensive plate and tissue factory. Died 25th September, 1882.

27 Professor Henry Draper, M.D.

Col. J. Waterhouse.

Born in Virginia 1837, the son of Professor J. W. Draper, educated at New York University, where he was elected Professor in 1860. Employed photomicrography in his medical researches 1857, and constructed a 15½ inch reflecting telescope, which he employed to photograph the moon. Built a 28 inch reflector, and in 1872 succeeded with it in photographing stellar spectra. In 1874 was Director of the Photographic Department of the U.S. Transit of Venus Commission. He did much other work in astro-physics. Died November 20th 1882.

28 J. H. Dallmeyer.

T. L. Dallmeyer.

Born in Prussia (1830). Received his training in the workshops of Hewitt, and subsequently of Andrew Ross, whose son-in-law he became. Entered into business for himself in 1859, and soon introduced in succession the triplet, an improved Petzval portrait, the wide angle and rapid rectilinear the wide angle, single, and other lenses. Many honours and awards were conferred upon him for his services to the science of optics. Died 30th December, 1883.

29 Henry Baden Pritchard.

Mrs. Pritchard.

Born November, 1841. In 1861 was engaged at the Woolwich Arsenal, subsequently conducting the photographic department there. Became Honorary Secretary of the Photographic Society in 1872; Vice-President 1883; proprietor of the *Photographic News*, 1880. Author of "The Studios of Europe," "A Trip to the Great Sahara with a Camera," and several novels. Died May 11th, 1884.

- 30 Jabez Hughes (1874). John Spiller.
Born in 1819. Worked as a daguerreotypist with J. E. Mayall, and in Glasgow (1849) for himself. Started wet collodion in London, 1855, and in 1861 acquired the studio at Ryde, with which his name has since been connected. A Member of Council of the Photographic Society; author of *The Principles and Practice of Photography* (1860), the best-known guide to wet collodion process. He died August 11th, 1884.
- 31 Walter Bentley Woodbury. Royal Photographic Society.
Born in Manchester, 1834. Sailed for the Australian goldfields, 1852. Worked there first as an engineer, and then as a professional photographer. Went to Java 1858, and through Messrs. Negretti and Zambra published a series of stereoscopic views of the island. Returned to England 1863. From this date on to his death he was a most prolific inventor. Woodbury-type, photo-filigrain, stannotype, are entirely his discoveries, and the Goupil method of photogravure, and half-tone relief block making owe much to his ingenuity and resource. Died September 5th, 1885.
- 32 Silvestre Laroche. W. S. Horton.
A prominent photographer in the early days of the Calotype and Daguerreotype processes. Defendant in the well-known suit, Talbot v. Laroche, brought in support of Talbot's 1841 patent which it was claimed followed the collodion process. The result of the action was in effect to render the collodion process free from legal restrictions. Died 1886.
- 33 Major C. Russell.
Born in 1820, he took up photography in 1856. Discoverer of the tannin process, originator of alkaline development, and of the employment of the bromides as restrainers. Died 16th May, 1887.
- 34 Robert Hunt, F.R.S. William Lang.
Born in 1807. He turned his attention to photography in 1842, and published in 1844 "Researches on Light," his best known work. He discovered (1844) the developing powers of ferrous sulphate; was one of the founders of the Photographic Society, and a member of its first Council. In his later years his attention was diverted to mechanical subjects, and he became Professor of Mechanical Science at the School of Mines, and keeper of mining records at the Museum of Practical Geology. Died October 17th, 1887.
- 35 J. R. Sawyer. Col. J. Waterhouse.
Born at Sheffield, 1828. One of the earliest carbon workers. Many of the details of the process as at present worked, are due to him. He was well known as a collotype worker, a process which attracted his attention in 1869. He introduced in 1885 a method of photo-engraving by means of a special tissue containing graphite. Died at Naples, January, 21st, 1889.
- 36 Herbert B. Berkeley. (Dec. 1879.) J. Spiller.
Born March 6th, 1851. He became connected with the Platinotype Co. in 1879, but is best known as the introducer of the use of sodium sulphite in the pyrogallol developer as a preventive of stain. He was a regular exhibitor at the Society's Exhibitions. Died in Algiers, May 26th, 1890.

- 37 **Rev. T. F. Hardwich.** Royal Photographic Society.
 Born at Wells, 1829. Appointed in 1849 Curator and Demonstrator of Practical Chemistry at King's College, and subsequently Professor of Chemistry there. Best known by his researches, which first founded the manufacture of collodion for photography on a rational basis, and by his work, *Photographic Chemistry*, published 1855 nine editions of which were soon exhausted. In his later years he introduced various improvements into the optical lantern. Took Holy Orders 1861. Died June 24th, 1890.
- 38 **Edward Becquerel.** William Lang.
 Born in Paris, March 24th, 1820. Devoted his attention to electricity, magnetism, optics and meteorology. He photographed the ultra-violet rays, and investigated the electric currents which originate in chemical actions set up by light, by means of his electro-chemical actinometer. He is perhaps best remembered by his researches in colour photography upon silver plates. Died May 11th, 1891.
- 39 **Joseph Petzval.** Col. J. Waterhouse.
 Born in Hungary in 1805. Professor of Mathematics in the University of Vienna. Undertook the improvement of photographic lenses in 1839, in conjunction with Voigtlander, and in 1841 introduced the portrait lens, now well known. At the same time he worked out a lens of narrower angle but of greater covering power (orthoscopic or orthographic) which was, however, not made commercially till 1857. He invented the most popular form of opera glass. Died 15th September, 1891.
- 40 **John Pouncy.** W. Pouncy.
 Born in 1821. Worked daguerreotype, calotype and wet-plate, and in 1857 published four volumes of photographs, "Dorsetshire, Illustrated." He is the discoverer of the gum-bichromate method, for which the French Photographic Society awarded him a prize (1859) as the best permanent photographic process. Died March 27th 1894.
- 41 **B. J. Sayce.** J. A. Forrest.
 Born 1837. Published, with W. B. Bolton, in 1864, the first practical (collodion) emulsion process. He did much work subsequently to improve the method, which held its own for dry plates until the advent of gelatino-bromide. Died May 23rd, 1895.
- 42 **J. Traill Taylor.** A. J. Taylor.
 Born January 23rd, 1827. Trained as a watchmaker, started in 1856 a circulating manuscript and magazine, *The Photographer*. Editor of *The British Journal of Photography*, 1864 to 1879, and from 1886 until his death. Edited the *New York Photographic Times*, 1880 to 1885. His writings on photographic optics are well known. Died in Florida, 8th November, 1895.
- 43 **R. Kennett.** Royal Photographic Society.
 Born in 1817. In 1874 he brought before the Society a means of preparing and keeping gelatine containing silver bromide in suspension (pellicle), which could be subsequently applied to glass as desired. This, and plates coated with it, he put upon the market, and by so doing gave an impetus to gelatino-bromide, then just emerging from the experimental stage. He died December 4th, 1896.

- 44 M. Carey Lea. Col. Waterhouse.
Born in Philadelphia, 1823. Investigated in 1862 several points in connection with aniline dyes. In 1866-7 collodion emulsion first attracted his attention, and he continued his experiments in the process until it was supplanted by gelatine. Advocated potassium bichromate and sulphuric acid for plate cleaning, the ferro-gelatine developer for wet plates, and Schlippe's salt for purposes of intensification. In 1887 he published a paper on the identity of what he styled the photo-salts of silver with the material of the latent image, which he followed up in 1889 by a communication upon three allotropic forms of silver. Died April, 1897.
- 45 George Dawson, M.A. (1864.) J. Spiller.
Born in 1821. Lecturer on photography at King's College for fifteen years, where he succeeded Thomas Sutton, in conjunction with whom he compiled a dictionary of photography which was a standard work. He edited two editions of "Hardwich's Chemistry," and was translator and editor of "Monckhoven's Optics," also one of the editors of the *British Journal of Photography*. Died July 12th, 1897.
- 46 Ferdinand Hurter, Ph.D. Vero C. Driffield.
Born March 15th, 1844. Trained at Zurich and Heidelberg under Bunsen and Kirchhoff. Came to England 1867, as chemist at an alkali works; appointed (1890) head chemist to the United Alkali Co., Ltd., a post he held until his death. With Mr. Driffield he investigated the physics and chemistry of the gelatine plate and its development, the first results of which were published in 1890. Since then the collaborators have made several further communications, his decease, on March 5th of this year, interrupting the issue of one of the most important of these, which was then appearing in the Society's organ, *The Photographic Journal*.

EARLY PHOTOGRAPHS & APPARATUS.

- 50 The first camera photograph. Mrs. H. Baden Pritchard.
Taken by Nicephore Niepce in 1824.
- 51 Print from a photo-etched plate by Mrs. H. Baden Pritchard.
N. Niepce, 1827.
- 52 Letter of Nicephore Niepce. Mrs. H. Baden Pritchard.
- 53 Heliographic Copy of a Print, by Nicephore H. P. Robinson.
Niepce, 1826.
- 54 Photo-etched Plate, from a Print, by Niepce, H. P. Robinson.
in 1827.
- 55 Print from the above. H. P. Robinson.
On the back is written by the Secretary of the Royal Society of that date, "Impression from a pewter plate of heliographic drawings by Mons. Nicephore Niepce, of Chalon-sur-Soane. Received from him at Kew, November 22nd, 1827. F. Bauer."



By kind permission.

Half-tone Engraving by
PLUMMER & CO.

[See advt. page 75.]



By permission of the Berlin Photographic Co.

Half-tone Engraving by
PLUMMER & CO.
 [See artist, page 75.]

DAGUERREOTYPE.

In the daguerreotype process a silvered copper plate was exposed to the fumes of iodine, thus having formed upon its surface a sensitive layer of silver iodide. After exposure in the camera the latent image was developed by exposure to the vapour of mercury, fixed with common salt, washed and dried.

The process was improved by Fizeau, who introduced gilding the image by depositing gold upon it; by Herschel who discovered the fixing powers of sodium hyposulphite; and by Goddard who increased the sensitiveness of the plate by fuming with bromine as well as iodine (Claudet advocated chlorine).

Daguerreotype has long been obsolete. The process can be seen in operation at Messrs. Negretti & Zembra's studio in the Palace (weather permitting), during the continuance of the exhibition, when visitors can be daguerreotyped.

- 56 Historique et description des pro- Royal Photographic Society.
 cedés du Daguerreotype et du
 Diorama par Daguerre, 1839.
 Contains a description of the processes of several plates, the apparatus
 necessary, and a portrait of Daguerre.
- 57 A Practical Description of Daguer- Royal Photographic Society.
 reotype, by M. Daguerre.
 This is a translation of the above, by J. P. Simon, M.D. Published in 1839.
- 58 Complete set of apparatus for working The Photographic Club.
 the Daguerreotype process.
- 59 Five Daguerreotypes. The Photographic Club.
- 60 Box of Daguerreotype Plates. W. F. Thomas.
 These are of the same date as the camera, 1842.
- 61 Daguerreotype. W. F. Thomas.
 Taken with the lens and camera, 1848.
- 62 Daguerreotype. Royal Photographic Society.
 Three sensitising boxes of various patterns.
 Grooved box for holding Daguerreotype plates.
- 63 Set of Daguerreotype Buffs used by John Pouncy Walter Pouncy.
 1844, and two plates as sent out by makers.
- 64 A Group of Celebrities. John J. Vezey.
 Daguerreotype formerly the property of M. Lerebour, a co-worker with
 Daguerre.
- 65 Two Figures in Eastern Costume. John J. Vezey.
 Daguerreotype.

- 66 Two Figures in Eastern Costume. John J. Vezey.
Daguerreotype.
- 67 Three Stereoscopic Daguerreotypes. W. Jerome Harrison.
(10/6 each.)
- 68 Three Daguerreotypes. J. M. Turnbull.
- 69 Interior of the Crystal Palace. J. M. Turnbull.
Stereo-Daguerreotype taken in 1851.
- 70 In the Crystal Palace. J. M. Turnbull.
Stereo-Daguerreotype taken in 1851.
- 71 Statuary. J. M. Turnbull.
Stereo-Daguerreotype taken in 1851.
- 72 Statuary. J. M. Turnbull.
Stereo-Daguerreotype taken in 1851.
- 73 Stereoscopic Daguerreotype. Royal Photographic Society.
A view in the Exhibition, 1851.
- 74 John Spencer of Liverpool. J. A. Forrest.
Daguerreotype, 1845.
- 75 Daguerreotype. Alfred Maskell.
By Laurent Suscipe, taken in January, 1852, from a piece of Luca della Robbia porcelain. The scratchings are due to an accidental fracture of the cover glass.
- 76 Daguerreotype Portrait. Mrs. W. Cheshire.
- 77 Stereoscopic Daguerreotype. Crystal Palace, 1855. J. Moffat.
- 78 Two Daguerreotypes, Brinborion-Dependance, 1844. Leon Marion.
- 79 Two Daguerreotypes, Groups, 1846. Leon Marion.
- 80 Two Daguerreotypes of Priest's Robe, 1843-4. Leon Marion.
- 81 84 Four Daguerreotypes, by J. Pouncy, 1844-49. Walter Pouncy.
- 85 96 Twelve Daguerreotypes. Crystal Palace. Negretti & Zambra.
- 97 Daguerreotype Portrait, by Silvestre Laroche. W. S. Horton.
- 98 Daguerreotype Portrait, by Silvestre Laroche. W. S. Horton.
- 99 Daguerreotype Statuary, by Silvestre Laroche. W. S. Horton.
- 100 Six Daguerreotype Portraits, by Silvestre Laroche. W. S. Horton.

TALBOTYPE OR CALOTYPE.

Talbot's process published in 1839. This, the first negative process and the basis of modern photography, consisted of the employment of paper impregnated with silver iodide, rendered sensitive by brushing over with gallo-nitrate of silver, and exposed wet, and developed by a further application of gallo-nitrate. Its subsequent modifications were known as the waxed paper process, ceroline process, etc., etc.

- 101 **The Pencil of Nature.** Royal Photographic Society.
This work was issued by Fox Talbot himself in parts, the date of publication extending from 1844 to 1846. Its object seems to have been to display the varied uses to which photography could be put for book illustration. It was the first book to be illustrated with photographs.
- 102 **Sun Pictures in Scotland.** Royal Photographic Society.
While the parts of the "Pencil of Nature" were coming out, Talbot issued this book complete. It contains 23 calotype prints. 1845.
- 103 **The Art Union Monthly.** Royal Photographic Society.
The June number of this volume, 1846, contained an article on Talbotype, illustrated by a print. In the copy exhibited, this has for its subject, "The Bridge of Orleans," but this differs with different copies. An inset advertisement, issued with the July number, relating to Talbotype and the issue of licenses, is pasted on the first page of the volume exhibited.
- 104 **Volume of Talbotypes.** Royal Photographic Society.
This book contains 82 Talbotypes. A number of these are known to be by Talbot himself, one or two of them being identical with those in "The Pencil of Nature." The prints in this volume were taken in 1843.
- 105 **Calotypes by D. O. Hill and R. Adamson.** Royal Photographic Society.
A number of these will be seen in the Art section. This volume contains 103, produced between 1843 and 1848.
- 106 **Two Volumes of Calotypes by D. O. Hill.** J. Craig Annan.
- 107 **Some Articles of China.** C. H. Talbot.
Calotype, taken by the late H. Fox Talbot, about 1844.
- 108 **The Open Door.** C. H. Talbot.
Calotype, taken by the late H. Fox Talbot, about 1844.
- 109 **A Haystack.** C. H. Talbot.
Calotype, taken by the late H. Fox Talbot, about 1844.
- 110 **The Leaf of a Plant.** C. H. Talbot.
Calotype, taken by the late H. Fox Talbot, about 1844.
- 111 **Huskiisson's Monument, Liverpool.** J. A. Forrest.
Calotype, 1850.

- 112 Dr. Cunninghame of Edinburgh. J. A. Forrest.
Calotype, 1843.
- 113 Rev. J. J. Wood. J. A. Forrest
Calotype, 1843.
- 114 Talbotype Negatives. W. F. Thomas.
Taken with the same lens. The Exhibition Building, 1851, is the subject of one negative, and the others are of about the same date.
- 115 Sheet of Turner's patent Talbotype Paper, 1851. W. F. Thomas.
- 116 Sheet of Whatman's Paper, 1851. W. F. Thomas.
- 117 Early Talbotype Photographs. Royal Photographic Society.
Lent by Robert C. Murray to the Society's Museum. This frame contains portraits of J. R. Williams, Cromwell Varley and others, also a Talbotype negative.
- 118 Early Talbotype Photographs. Royal Photographic Society.
Lent to the Society's Museum by Robert C. Murray.
- 119 One Frame of Early Talbotype Photographs. Royal Photographic Society.
Lent to the Society's Museum by R. C. Murray.
- 120 Bebington Village. J. A. Forrest.
On opal, being a transfer from paper to glass, 1845.
- 121 Portrait on salted paper, coloured in water-colours, by J. Pouncy, 1850. Walter Pouncy.
- 122 Talbotypes. J. M. Turnbull.
A series of 14 Calotypes of various subjects (portraits, landscapes, figure subjects, and architecture), illustrating the early work done on paper.
- 123 Views near Bath. William Lang
Calotypes.
- 124 Four Paper Negatives. A. L. Henderson.
Taken by the late J. G. Tunny, of Edinburgh, about 1844.
- 125 Frame of four Prints from Paper Negatives, 1853. Adrian Harley.
Victor Hugo.
Chas. Hugo (the poet's son).
Victor Hugo (fils).
The house at Marine Terrace, Jersey, where Victor Hugo lived for a short time in May, 1852, after his expulsion from Brussels by order of Napoleon III.

- 126 Roslin Chapel Door, Edinburgh. R. Rimmer, J.P., F.L.S.
Platinotype print and wax paper negative taken by the exhibitor in 1859.
- 127 Kirkham Priory Doorway, Yorkshire. R. Rimmer, J.P., F.L.S.
Platinotype print and wax paper negative taken by the exhibitor in 1860.
- 130 North West Tower, Peterborough. Royal Photographic Society.
Print from a negative taken on ceroline paper (a modification of Le Gray's wax paper process), taken in June, 1869, 7 a.m. Exposure 20 minutes. Developed with nitro-gallic acid and ammonia. Presented by G. Fowler Jones, F.R.I.B.A.
- 131 St. Mary's Abbey, York. Royal Photographic Society.
Print from a negative taken on ceroline paper (a modification of Le Gray's wax paper process), taken in May, 1863. Exposure 20 minutes. Developed with nitro-gallic acid and ammonia. Presented by G. Fowler Jones, F.R.I.B.A.
- 132 Whitby Abbey. Royal Photographic Society.
Print from a negative taken on ceroline paper (a modification of Le Gray's wax paper process), taken in July 1861. Exposure 20 minutes. Developed with nitro-gallic acid and ammonia. Presented by G. Fowler Jones, F.R.I.B.A.
- 133 Kenilworth from the Road. Royal Photographic Society.
Platinotype print from the calotype negative taken in 1852 on paper prepared by the donor, G. Fowler Jones, F.R.I.B.A., and developed by Fox Talbot's method.
-

The following exhibits may be fitly introduced here, being by paper or film negatives, although of a more modern nature, and differing essentially from the Talbotype process.

- 134 The Transepts, Rievaulx Abbey. Royal Photographic Society.
Negative on Morgan and Kidd's ordinary bromide paper, May, 1882. Developed with pyro and ammonia. Six seconds exposure. Presented by G. Fowler Jones, F.R.I.B.A.
- 135 The Choir, Rievaulx Abbey. Royal Photographic Society.
Print from a negative taken on Morgan and Kidd's ordinary bromide paper, May, 1882. Developed with pyro and ammonia. Six seconds exposure. Presented by G. Fowler Jones, F.R.I.B.A.
- 136 The Old Elm Tree, Parlington Park. Royal Photographic Society.
Print from a negative taken on Alpha paper (supposed to be the first instance of its employment for that purpose) in October 1882. Exposure 30

seconds. Developed with pyro and ammonia. Presented by G. Fowler Jones, F.R.I.B.A.

137 **The Thames and St Paul's.** **Royal Photographic Society.**

These three frames are illustrations of a method of enlargement proposed by Valentine Blanchard in 1873. No. I. is an enlarged transparency made direct from the original negative. No. II. is a wax paper negative made from No. I. This transparency can be worked up as thought desirable. No. III. is the finished print from the enlarged paper negative. Lent by Valentine Blanchard to the Society's Museum.

138 **Five Negatives on Warnerke's collodion tissue.** **L. Warnerke.**

139 **Four Negatives taken on Warnerke's negative tissue** **L. Warnerke.**
in 1875, in a roller slide between glass.

140 **One Negative and Positive on Warnerke's collodion** **L. Warnerke.**
negative tissue, taken in a roller slide (1876)
between glass, Liege, Belgium.

WET COLLODION.

A glass plate, or in the ferrotype process a prepared iron plate, is coated with collodion (pyroxiline dissolved in alcohol and ether) containing iodide or bromide salts, and immersed in a solution of silver nitrate to render it sensitive. After exposure the image was developed with gallic acid or pyrogallol (ferrous sulphate was subsequently employed) and fixed. Superseded for portraiture by the more rapid gelatine dry plate, for landscape by the same on account of the difficulty of preparing the plates in the field: it is still regarded by the majority of process-workers as their sheet anchor, while in the form of glass positives and ferrotypes it survives at fairs, the seaside, &c., being cheap and yielding a finished positive in a few minutes.

NEGATIVE PROCESS.

141 **Manual of the Collodion Photo-** **Royal Photographic Society.**
graphic Process.

Published in 1852 by F. Scott Archer, and contains a practical description of the process.

142 **Portable Silver Bath for Wet Plates.** **Royal Photographic Society.**

An early form, provided with a hinged screw-down lid with guttapercha pad to make it watertight for travelling.

143 **Photographic Club Albums.** **Royal Photographic Society.**

In the very early days of the Society a few of its members formed themselves into a social Club, which issued three publications in all.

- 1 The Photographic Club Album for 1855, containing 44 photographs by members of the club.
- 2 An Album of portraits of the members, published in 1856.
- 3 The Photographic Club Album for 1857, containing 39 photographs by members of the club.

These books are of interest, from the remarkable state of preservation of many of the photographs, and from the fact that, in addition to the prints themselves, very full details are given of the conditions under which the negative was taken, and of the printing process.

- 144 Prints from Collodion Wet-Plate Negatives. Alfred Brothers.
The visit of the Queen and Royal Family to the Art Treasures Exhibition, Manchester, in 1857. No. I., the Address; No. II., the Reply.
- 145 Instantaneous Photographs on Wet Collodion Plates. Royal Photographic Society.
Twelve prints by Valentine Blanchard, and twelve stereoscopic prints by W. England, being instantaneous photographs taken between the years 1856 and 1865.
- 146 Instantaneous Photographs on Wet Collodion, about 1865. T. Bolas.
By Valentine Blanchard.

POSITIVE PROCESS.

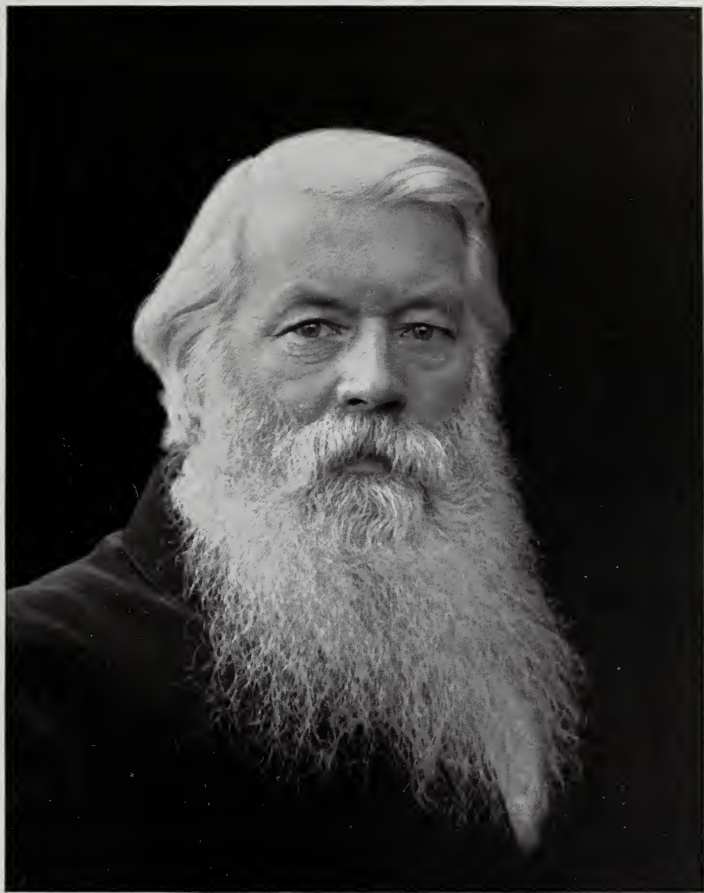
- 147 Two Glass Positives. The Photographic Club.
- 148 Seven Glass Positives. J. A. Forrest.
- 149 Two Ferrotypes. J. Smith.
- 150 Four Glass Positives. J. M. Turnbull.
- 151 Calton Hill, Edinburgh. J. M. Turnbull.
Sereo-Collodion on glass.
- 152 Calton Hill, Edinburgh. J. M. Turnbull.
The Foreground is the site of the present Waverley Station. Stereo-Collodion on glass.
- 153 View of Edinburgh Castle. J. M. Turnbull.
Stereo-Collodion on glass.
- 154 Early Portrait. J. M. Turnbull.
Stereo-Collodion on glass.
- 155 Mausoleum. J. M. Turnbull.
Stereo-Collodion on glass.
- 156 Ruins of Abbey. J. M. Turnbull.
Stereo-Collodion on glass.
- 157 View in Rome. J. M. Turnbull.
Stereo-Collodion on glass.
- 158 Interior of the Crystal Palace. J. M. Turnbull.
Stereo-Collodion on glass.

- 159 Six Scenes from Richard II., 1857. W. S. Horton.
- 160 Six Scenes from the Merchant of Venice, 1857. W. S. Horton.
- 161 Scene from "Twelfth Night," with Portraits. W. S. Horton.
Photographed by the late Silvestre Laroche.
- 162 Three Miniatures in cases. W. S. Horton.
-
- 163 Examples of Eburneum Portraits. E. W. Foxlee.
Burgess' process, 1865. Made by E. W. Foxlee, 1867. A collodion transparency toned with gold or mercury was vanished, coated with an emulsion of zinc oxide (white) in gelatine, dried, coated with plain collodion, and stripped from the glass.
- 164 Crystal Portraits, 1869. E. W. Foxlee.
These are Collodion transparencies from negatives cemented in optical contact with opal glass.
-
- 165 Negative by Fothergill's Collodio Albumen Process.
Royal Photographic Society.
Lent by F. Beasley to the Royal Photographic Society's Museum.
- 166 Negative by Fothergill's Collodio Albumen Process.
Royal Photographic Society.
Lent by F. Beasley to the Royal Photographic Society's Museum.

COLLODION EMULSION.

Introduced by Bolton and Sayce, 1864. The silver bath was dispensed with, the plate being coated with collodion, holding silver bromide in suspension. Such a process had long been regarded as a desideratum. Major Russell's discovery of alkaline development, 1862, prepared the way for Bolton and Sayce, by introducing a developer with which silver bromide was more sensitive than the iodide, a salt that could not be emulsified satisfactorily.

- 167 Interior of Sefton Church, Liverpool. J. A. Forrest.
Print from collodio-bromide emulsion negative. By the late B. J. Sayce.
- 167a Broxton Hall, Cheshire. J. A. Forrest.
Print from collodio-bromide emulsion negative. By the late B. J. Sayce.
- 168 Collodion-Bromide Emulsion. Osmond R. Green.
Photographs taken direct by the exhibitor, by the Collodio-Bromide emulsion process. These with others of the same size (24 inches \times 18 inches, demonstrated the fact that large plates could be successfully coated, and good negatives produced without a nitrate of silver bath. 1867.



JOSEPH WILSON SWAN, M.A., F.R.S., &C.,

Inventor of the "Carbon Process" ("Autotype,") and of the "Rapid Dry 'Plate.'"



Engraved in "SWANTYPE" by the
SWAN ELECTRIC ENGRAVING COMPANY.



- | | | |
|---|-----------------------------------|---------------------------------------|
| 1 | Negative of Melrose Abbey. | |
| 2 | Negative of Furness Abbey. | |
| 3 | North West View of Furness Abbey. | } Printed upwards of
27 years ago. |
| 4 | Near Bettws-y-Coed | |
| 4 | South West View of Furness Abbey. | |

169 The Permanence of the Latent Image.

Royal Photographic Society.

Three negatives of Woodgate Cottage, Ewell, Presented to the Royal Photographic Society by J. Sterry. Developed fifteen and a-half years after exposure.

GELATINO-BROMIDE.

Plates coated with an emulsion of silver bromide in gelatine are now employed in most cases as the sensitive medium. They supplanted the collodion plates on account of their superior sensitiveness and convenience. The first successful negatives were made in 1871 by Dr. Maddox. By far the greater portion of the photographs in this Exhibition have been made by means of the gelatine-bromide process.

170 First Gelatino-bromide Negatives. Dr. R. L. Maddox.

Two mounts with 8 negatives of earliest original experimental work in Gelatino-bromide dry plates; view near Southampton.

171 Vulcanite Emulsion Breaker. A. L. Henderson

Designed for cutting up small quantities of emulsion without handling.

172 Emulsion Filter. A. L. Henderson.

Used for filtering emulsion in small quantities through leather. This pattern of apparatus was largely employed in the earlier days of the gelatino bromide process.

173 Emulsion Washer. A. L. Henderson.

Designed by the exhibitor for washing the cut-up emulsion in a stream of water.

174 Emulsion Coater. A. L. Henderson.

For use for coating by hand, being provided with an arrangement for intercepting air bells.

175 Plate Coating Machine. A. L. Henderson.

Devised by the exhibitor for coating plates with a measured quantity of emulsion. Part of the tramway on which the plates were carried from the machine is included in the exhibit.

176 Model of Plate Coating Machine. A. L. Henderson.

This is a model of the last-mentioned exhibit.

177 Centrifugal Separator. A. L. Henderson.

This instrument is used for eliminating from the emulsion the soluble salts formed upon the double decomposition of the alkaline haloids and the silver nitrate, together with the gelatine with which the emulsion was boiled.

VARIOUS METHODS OF CARBON PRINTING.



CARBON printing is a term very generally applied to those methods in which a pigment is so entangled or held by photographic means as to form a photograph—this photograph being permanent if carbon has been selected as a pigment; such methods having largely arisen out of a desire to produce permanent photographs in which Carbon is the pigmentary basis.

The most direct method of producing a carbon print is to make a sheet or film of some gum-like or gelatinous material with which the pigment is incorporated; the gum-like or gelatinous material having been so prepared with a chromate that exposure to light renders it insoluble. This pigmented and sensitive film having been exposed to light under a negative becomes more or less insoluble in its various parts, according to the extent

to which light acts. After exposure it is soaked in water which dissolves away a greater or less thickness of the pigmented film, and the varying thicknesses of pigment form the picture. Only one form of this method is simple of execution, this being the old Gum-bichromate process of Poitevin and Pouncy, in which a mixture of Gum-mucilage, pigment and a bichromate, is brushed over a sheet of paper; the sheet being then dried and exposed. It is now soaked in water—cold or slightly warm as the case may be—and the pigmented film slowly dissolves away, but more or less freely according to the degree of exposure. A theory that this process could not possibly render tone-gradation, appears to have had a remarkable influence in hindering its general adoption, but recently Messrs. Maskell, Demachy and others have demonstrated its value, and many specimens of the process are to be seen in section II. by these gentlemen and others, while Herr Behrens has cleared up certain theoretical difficulties, so the method seems likely to be extensively practised. The more usual process of carbon printing in which a film of sensitive pig-

mented gelatine is employed, is much more complex, and involves one transfer or more of the sensitive film—the pigmented gelatine being in no case sufficiently stable or firm to be handled and treated without being supported. This method is due to the successive labours of Poitevin, Sutton, Fargier, Swan, Johnson and others; the Autotype Company having taken a leading part in the commercial introduction of the improved process; hence the method is often called Autotype.

From that which is said above, it will be obvious that the pigmented film must itself be a relief, in which the tones of the original negative are reproduced by corresponding degrees of thickness, and in the Woodburytype process an original print is made in which special means are taken to considerably emphasise this relief. A mould in lead is made by pressure from this original (a Woodbury relief), and prints in pigmented gelatine are moulded or cast in this leaden reverse. Success in Woodburytype requires very special skill, and many specimens illustrative of Mr. W. B. Woodbury's experiments, including variations of the original process, are shown in the historical collection. A curious application of the Woodbury relief is found in Mr. Woodbury's Photo-filigrane process, in which a factitious watermark on paper is produced by hard-rolling the sheet against a Woodbury relief.

Numerous interesting processes depend upon the fact that a surface of chromated gelatine (or other colloid), which has been exposed under a negative, will swell in water most considerably where the action of light has been least; the relief thus obtained giving a basis for the production of printing surfaces by casting. Such an exposed and soaked surface will engage or hold a powdered colour or pigment on its swelled or wet parts, if such colour is loosely brushed over its surface, and in this fact we have the basis of the Anthrakotype process of Pizzighelli. If on the other hand an ordinary lithographic roller is passed over a similar surface, the wet parts will refuse the fatty ink and the dry or unswelled parts will receive it, after which an impression on plain paper, or on a lithographic stone, can be made from the surface thus discriminatively inked. In methods of this kind we have the basis of Collotype and many forms of photo-lithography.

T. BOLAS.

GUM-BICHROMATE.

- 178 Copy of an Engraving. Walter Pouncy.
By J. Pouncy, Gum Bichromate, 1858.
- 179 Copy of an Engraving. Walter Pouncy.
By J. Pouncy, Gum Bichromate, 1858.
- 180 Copy of an Engraving. Walter Pouncy.
By J. Pouncy, Gum Bichromate, 1858.
- 181 Gum-bichromate views in frame (1858), with Walter Pouncy.
letter from Dr. Becker (Sec. to H.R.H.
Prince Consort.)
- 182 Photograph in Ink. Walter Pouncy.
Melrose. By J. Pouncy, glossy surface, 1868.
- 183 Photograph on wood panel, for room decorations, Walter Pouncy.
by J. Pouncy.
- 184 Photo-mechanical copy of painting in oil colours, Walter Pouncy.
by J. Pouncy, 1875.
- 185 Portrait in Ink on ivory, by J. Pouncy, 1866. Walter Pouncy.
- 186 Portrait in Ink on Millboard, by J. Pouncy, Walter Pouncy.
1864.
- 187 Photograph in Ink. Walter Pouncy.
By J. Pouncy, without transfer, matt surface, 1868.
- 188 Photograph in Ink. Walter Pouncy.
By J. Pouncy, without transfer, matt surface, 1863.
- 189 Photograph in Ink. Walter Pouncy.
By J. Pouncy, without transfer, matt surface, 1863.
- 190 Two Direct Pigment Prints (circa 1867). Col. Waterhouse.
Obtained with transfer (line subject), by the exhibitor, on paper prepared
with gelatine and pigment, by Swan.
- 191 Gum-bichromate Prints. A. Horsley Hinton.
A series by M. R. Demachy, prepared to illustrate a paper read before the
Royal Photographic Society on the process. The labels on the prints
indicate the purpose of each.

CARBON BY SINGLE & DOUBLE TRANSFER.

- 192 Model of Tissue-Making Machine. Royal Photographic Society.
Lent to the Society's Museum by J. W. Swan. This machine illustrates
the manufacture of carbon tissue, by passing a band of paper round a roller,
lowered just beneath the surface of a trough containing the pigmented gelatine
solution, which is kept liquid by a hot water or steam jacket.

- 193 **Glass Model.** Royal Photographic Society.
Lent to the Society's Museum by J. W. Swan. This consists of a series of pieces of uniformly-tinted glass, showing the different depths of tint obtained as the thickness of the material bearing the colouring matter increases.
- 194 **Early Carbon Print by T. and R. Annan.** Royal Photographic Society.
Lent to the Society's Museum by J. W. Swan.
- 196 **Carbon Prints.** Royal Photographic Society.
An early specimen of double transfer carbon produced in 1864, and lent to the Society's Museum by J. W. Swan.
- 197 **Carbon Process.** Royal Photographic Society.
Plaster cast from a carbon print of Kenilworth, to show the relief. Lent by J. W. Swan to the Society's Museum.
- 198 **Electrotype from a Carbon Relief.** Royal Photographic Society.
Lent by J. W. Swan to the Royal Photographic Society's Museum.
- 199 **Electrotype from a Carbon Relief.** Royal Photographic Society.
Lent by J. W. Swan to the Royal Photographic Society's Museum.
- 200 **Double Transfer Carbon Print.** Royal Photographic Society.
Obtained in 1864 by J. W. Swan, and lent by him to the Society's Museum.
- 201 **Early Carbon Prints.** Royal Photographic Society.
Frame of six prints in different tints of Holy Street Mill. Lent by J. W. Swan, to the Society's Museum. Produced in 1865.
- 202 **Presentation picture of the North London Photographic Association for 1866.** E. W. Foxlee.
"Musing I sit upon the shore
Awaiting till the boat shall come."
"Waiting for the Boat." H. P. Robinson. This carbon print is interesting as it is by double transfer, by Swan's original process, the indiarubber flexible support method, and was printed by Mawson and Swan at Newcastle-on-Tyne.
- 203 **Carbon Negative, stripped by Wenderorth's Process.** Royal Photographic Society.
Lent to the Society's Museum by T. Bolas.
- 204 **Sundry Carbon prints, 1871-2.** Leon Marion.
- 205 **Specimen of Lambertype.** The Photographic Club.
This is a carbon print on collodion ready for transfer to the paper. Made by M. Lambert in 1875, when teaching his process at Greenwich.
- 206 **Examples of the "continuating action" of light in carbon printing.** E. W. Foxlee.

These prints, with others, were exhibited in illustration of a paper read by E. W. Foxlee at the May (1879) meeting of the original South London Photographic Society, in which it was shown that the continuatng action was dependent upon moisture in the tissue, and that it was accelerated by heat. The experiments were conducted as follows:—Six negatives of equal density being placed in a printing frame, a piece of tissue was placed over them and partially printed. This was then cut into six pieces, each forming a picture. One was developed at once (labelled A in each frame) and the others kept for different periods prior to development. The conditions under which the prints were kept are mentioned in the different frames.

WOODBURYTYPE.

207 Auer's Nature Printing Process. T. Bolas.

Invented by Auer and Worring in Vienna, 1853. In nature printing the object to be copied is coated with a mixture of Venice turpentine and spirit of wine, to fix it and allow it to be spread out on a very smooth and highly polished steel or copper plate. Over this a clean smooth plate of pure lead is placed and the whole passed through a copperplate press under very great pressure. A plate is thus obtained bearing on its surface an exact imprint of the object. The lead being too soft to print from, a mould must be made from it and then electrotyped in copper to yield a printing plate. A large number of plates of natural objects were published in this manner, but the method seems to have fallen out of use of late years. The principle was revived by Woodbury in the Woodburytype process.

208 Woodburytype. Royal Photographic Society.

- 1 This is a specimen of one of Woodbury's experiments, made with a view to the printing of Woodburytypes continuously by means of a cylindrical mould, December 21st, 1866.
- 2, 3 Very early attempts at Woodburytype made by Woodbury while in Java.
- 4, 5 Experimental Results made by Woodbury in his endeavours to obtain Woodburytype Lantern Slides in continuous lengths on film. This was always an object after which he strived, but without success.
- 6, 7, 8 Some of the earliest Woodburytypes.
- 9 The first Woodburytype mould in copper.
- 10, 11, 12 Early Woodburytypes.
- 13 A Woodburytype Relief by W. B. Woodbury, from a negative by O. G. Rejlander.

209 Woodburytype, Illustrative Examples. J. D. Geddes.

Made by Waterlow & Sons, Ltd. The set comprises—

- 1 Piece of Sensitized Tissue of which the relief is made.
- 2 A Developed relief.
- 3 Sheet of Lead before being impressed with the relief.
- 4 The Lead impression or Mould.
- 5 A Print therefrom.

210 Woodburytype. T. Bolas.

(a.) Type mould obtained by casting from the gelatine relief, in fusible metal. Prepared at Cantor Lecture, 1878.

(b.) Print or Cast in pigmented gelatine from the above mould.

- 211 Coloured Woodburytype. Royal Photographic Society.
In this frame is seen (1) a Woodburytype printed in the ordinary manner.
(2) A Woodburytype transferred to a coloured base. This process was
designed by Woodbury for the production on a large scale of photographs in
colour.
- 212 Two Frames of Coloured Woodburytypes. Mrs. George Smith.
-
- 213 A Frame of Stanotype Moulds. Royal Photographic Society.
The moulds in this frame were made by Woodbury himself in the course
of his working out of the process.
- 214 Stanotype Mould and Print. T. Bolas.
The print forms an illustration to the "Traité Pratique de Photoglyptie,"
the mould with it being one of those actually used to produce the illustrations
to the book.
- 215 Manual of the Stanotype Process. T. Bolas.
This pamphlet gives an account of the process and practical details for
working it; it was issued for private circulation only.
-
- 216 Pizzighelli Anthrakotype. Royal Photographic Society.
-
- 217 Photo-filegrain Relief. Royal Photographic Society.
Made by Woodbury.
- 218 Photo-filegrain Relief. Royal Photographic Society.
Made by Woodbury.
- 219 Frame of Photo-filegrains. Royal Photographic Society.
Made by Woodbury.
-

PHOTOGRAPHIC ENAMELS, CERAMICS.

- 300 A Frame of Ceramic Enamels. A. L. Henderson.
Examples of the process as worked by the exhibitor.
- 301 A Frame of Ceramic Enamels. A. L. Henderson.
This frame shows the various stages of the process.
- 302 A Frame of Ceramic Enamels. A. L. Henderson.
Examples of the process as worked by the exhibitor.
- 303 Enamels. The Photographic Club.
A frame containing thirteen specimens of Ceramic Enamels, by Lafon de
Camersac and Joubert.

- 304 Photo-Ceramic Decoration on Glass. The Photogram, Ltd.
 Reproduced by line process, transferred to glass, etched, filled in with ceramic pigment and fired. Manufactured by a firm no longer in existence.
- 305 Photo-Mechanical Ceramics. The Photogram, Ltd.
 Tile decoration, process of George H. Grundy, of Derby. The success of the process depends upon printing the ceramic colour in from five to seven successive impressions from one collotype plate, on biscuit pottery carefully selected for its property of rapidly absorbing the greasy medium of the ink, while preventing the sinking into its surface of the colour for which the ink is the vehicle. This process admits of reproduction in any colour, and from either photographic or any other originals.
- 306 Photo-Ceramic Tile. The Photogram, Ltd.
 By the carbon transfer process, by D. Gay.
- 307 Photo-Ceramics on Glass. The Photogram, Ltd.
 Two examples by the patented process of Oeffelein & Co.
- 308 Enamels. J. S. Teape.

MISCELLANEOUS PRINTING PROCESSES.

- 309 Print by the Uranium Process, 1858. Col. Waterhouse.
 Paper sensitised with uranium nitrate, and developed with chloride of gold.
- 310 Cyanotype Reproductions of British Algae. William Lang.
 Two volumes which belonged to Robert Hunt. Attached is a monograph relating to them, read before the Glasgow Philosophical Society by the exhibitor.
- 311 Sundry Ferro prussiate prints, 1871-2. Leon Marion.
- 312 Composite Group. Alfred Brothers.
 The President and Chairmen of the various sections of the British Association Meeting in Manchester, in 1861; one of the earliest composite groups being from 30 negatives.
- 313 Albumen Prints, by James Anderson, of Rome. J. G. Hepburn.
 1 Coliseum at Rome.
 2 Arch of Septimus Severus, Rome.
 3 Arch of Constantine, Rome.
 4 Church of Ara Coli, Rome.
- 314 O. G. Rejlander. Royal Photographic Society.
 "I'm a young girl from the country,
 But you don't get over me."
 (A signed print by Rejlander, lent by T. Bolas.)
- 315 Prints Illustrating the first use of Magnesium for Photographic Purposes. Alfred Brothers.
 The portrait of Professor Faraday was taken during a lecture, by

Professor Rescoe at the Royal Institution in 1863. The print of the Blue John Mine in Derbyshire is believed to be the first photograph taken below the surface of the earth.

- 316 Specimen of Simpsontype, 1864. Royal Photographic Society.
A specimen of collodio-chloride presented by H. P. Robinson to the Royal Photographic Society's Museum.
- 317 Bitumen Print. Royal Photographic Society.
A negative in half-tone produced by bitumen, made insoluble by the action of light, lent by T. Bolas to the Royal Photographic Society's Museum.
- 318 View by Moonlight. Royal Photographic Society.
Taken on January 7th, 1893, at 10 p.m., by Captain Abney, from Couttet's Hotel, Chamounix.
- 319 Frame of Four Landscape Views. T. Charters White.
Printed by moonlight.
- 320 An exposure table for Ilford plates. S. H. Saunders.

THE PHOTOGRAPHIC CAMERA.

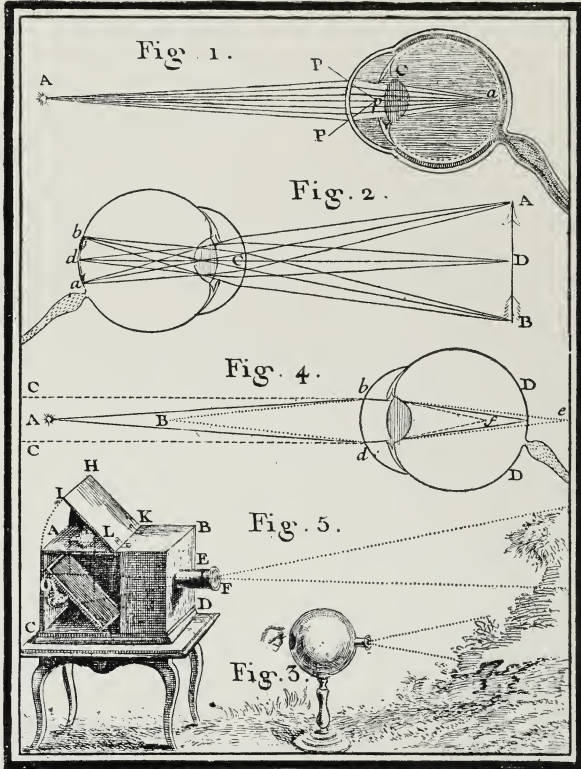


LONG before the advent of Photography the Camera Obscura was well-known, and was looked upon as one of the chief attractions of those physical cabinets or demonstration rooms which became popular in Europe about the middle of the seventeenth century, the initiative in this revival being chiefly due to the learned Jesuit Kircher whose museum at Rome (*circa* 1640) was the seed from which sprung our Royal Society and the *Accademia del Cimento* of Florence; Kircher's avowed aim being to revive that Alexandrian experimental school of which Hero the Elder (*circa* 100 B.C.) was a distinguished ornament.

One form of the pre-photographic camera, as it existed about 1755, is well shown by the accompanying plate, reproduced from the fifth volume

of the Abbé Nollets *Leçons de Physique*, published at Paris in 1755, a work of special interest, as the sketches of apparatus were, I believe in almost every case, made from the objects in the author's demonstration rooms; rooms which were a lounging place for the court of Louis XV. The plate is also interesting as showing how the author compared the

TOM. V. XVII. LECON. Pl. 5.



eye with the camera and dealt with the question of conjugate foci. Still further is the plate interesting as showing how similar was this camera of 1755 to some of the latest forms of reflex camera.

One of the first mentions of the photographic camera is in connection with the early photographic researches of Nicéphore Niepce, which were commenced about 1813. Niepce writing to his brother Claude in April

1816, describes his camera as a box about six inches square and furnished with an extensible tube carrying a lens. In May of the same year he gives some details of work with it. Ten years later Niepce ordered a special camera to be made by the optical firm of Vincent and Charles Chevalier of Paris, the lens to be furnished with a reversing prism. A photograph shown to Chevalier when this order was given led to the association of Niepce and Daguerre.

Charles Chevalier much improved both Camera and lens, and the first portable folding cameras were I believe made by him. The modern camera in all its chief forms whether still, as for ordinary work, or moving, as in the case of the Harrison-Johnson Pantoscopic Camera or Colonel Stewart's Panoram, is sufficiently illustrated by the collection itself.

T. BOLAS.

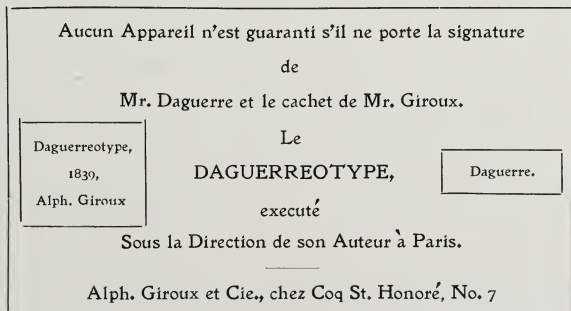
- 321 *De Humana Physiognomonía.* William Lang.
With portrait of J. Baptista Porta. Sorrento, 1586.

- 322 *Magiæ Naturalis.* William Lang.
J. Baptista Porta. Amsterdam, 1664.

- 323 *Philosophical Experiments.* William Lang.
With engraving of an early form of Camera. Hooke, London, 1726.

- 324 *Giphantia.* Royal Photographic Society.
This book, printed in 1761, has a chapter in which photography is foreshadowed in a very interesting manner.

- 325 *A Camera.* W. F. Thomas.
The exhibitor's first camera, date about 1842. On the camera is an oval label containing the following inscription:—



- 326 Revolving Diaphragm. W. F. Thomas.
By Palmer, Newgate Street, about 1844.
- 327 A Camera. A. L. Henderson.
This is a very early pattern, having been made by Horne, Thornthwaite and Wood between 1840-1846.
- 328 View Camera used by John Pouncy for the Walter Pouncy.
views of Dorset Illustrated, 1850-4.
- 329 Wet Plate Camera. Royal Photographic Society.
This camera was made for Archer in 1854, and was consequently one of the first employed in wet plate work. Lent by the late W. Bedford to the Society's Museum.
- 330 Camera. Joseph Tilfor.
Believed to be the first camera with the tripod legs attached direct to the base board. The plate box hooked on to the back of the base board inside the changing bag fixed to camera, the plates being lifted into the back without a dark slide. Exhibited at a meeting of the North London Society in June, 1858.
- 331 Tailboard for 15 × 12 Camera. Geo. Mason & Co.
With turntable and levelling screws, made by George Shaw, engineer Springburn, Glasgow, 1859.
- 332 An Old Form of Folding Camera. W. Coles.
This pattern of folding camera, made throughout of wood, in which the sides were hinged and folded inwards, was very popular in the Fifties, and will be seen figured in most of the contemporary prints in which an amateur landscape photographer occurs.
- 333 Old Type of Stereoscopic Camera with a pair William Lang.
of Spectacle Lenses.
- 334 Single Camera with stereoscopic attachment. William Lang.
- 335 Dubroni's Wet Plate Field Apparatus. Royal Photographic Society.
This form of portable apparatus consisted of a glass tank of yellow glass which formed the camera. The plate was collodionised and enclosed in the body of the camera, filled with silver bath solution by means of a rubber ball and tube. Developing and fixing were carried on also in the camera, the progress of the operation being watched by the eye being placed on the lens, the door at the back, containing a yellow glass window, being open for the purpose.
- 336 Latimer Clark's Stereoscopic Camera. Royal Photographic Society.
- 337 Portable Camera for Wet Plates. Royal Photographic Society.
This pattern was devised by Professor Piazzi Smyth in 1870 for carrying four wet plates, and exposing them while in the silver bath. The dark slide

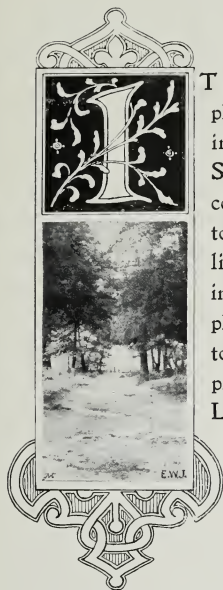
which is also the bath, is square in plan, with a plate on each face, each plate having its own shutter. It is fitted with the "Medallion" portrait lens of Dallmeyer, working at nearly $f/2$. Focussing is effected by an arrangement of screws attached to the lens.

- 338 Another form of the same Camera, with 3 dark slides.
Royal Photographic Society.
- 339 An Early Form of Opera Glass Camera.
Royal Photographic Society.
Lent to the Society's Museum by E. Clifton.
- 340 An early form of Drop Shutter.
The Photographic Club.
- 341 Thompson's Photographic Revolver.
T. Bolas.
An early form of hand camera.
- 342 Early Form of Detective Camera.
Royal Photographic Society.
Made by T. Bolas.
- 343 Sutton's Panoramic Water Lens.
Royal Photographic Society.
Dark slide and focussing screen holder for curved plates for use with Sutton's Panoramic Water Lens. Royal Photographic Society.
- 344 Johnson's Pantascopic Camera.
Royal Photographic Society.
- 345 The "Panoram."
Colonel Stewart.
This camera, designed for the purpose of taking a photograph of unlimited angle, rotates on its optical axis in one direction, whilst the sensitive film rotates in the opposite direction. The two motions are synchronized, so that a stationary image is impressed on the film.
Taken with the Panoram.
1 Westminster Abbey and the Houses of Parliament.
2 Tower of London and Tower Bridge.
3 The Matterhorn—Zermatt, Switzerland.
- 346 Model of a Shutter.
Chapman Jones, F.I.C., F.C.S.
(Year Book Phot., 1885, p. 54.) The disc is rotated at a uniform rate, and to vary the exposure the moveable sector is caused to cover more or less of the aperture.
- 347 A Shutter.
Chapman Jones, F.I.C., F.C.S.
("Photography," July 12th, 1894.) An improved form of the previous exhibit, made to exhibitor's model by Messrs. Swift & Son; the disc being replaced by a mere sector which makes a complete revolution, except for the thickness of the stop. As the sector is small, the efficiency of the shutter is very high. The speed is varied by increasing the size of the sector (a second sector moves stiffly on the main sector for this purpose), or by putting on another spring.
- 348 Sectional Drawing of a Finder.
Chapman Jones, F.I.C., F.C.S.
("Photography," June 14th, 1894.) The lens has an aperture of $F/2$, and as the ground glass screen is quite protected from extraneous light, the image

is very brilliant. One finder serves for both positions of the camera by simply rotating the mirror. Although the finder lens is at the front of the camera, the mirror and viewing holes may be as near to the back as desired.

- 349 **The Memorandum Camera.** Chapman Jones, F.I.C., F.C.S.
 ("Photography," Feb. 27th and March 6th, 1890). Made by Messrs. Swift & Son. The camera is constructed for half-quarter plates, which are carried in it. Also for use in connection with the camera, a cutting board with gauge and an eyepiece with clip to hold negatives of printed matter and facilitate the reading of them. A shutter separate from the camera shows the large spring roller, the blind carried on side tapes, and the very long aperture in the blind giving great efficiency.
- 350 **Photographic Gun, made by Sands and Hunter.** Sands, Hunter & Co.
- 351 **Box, Sliding Body Camera.** Sands, Hunter & Co.
 Much used in the early wet plate days for studio work.
- 352 **Collapsible Box Camera.** Sands, Hunter & Co.
 Similar to No. 332.
- 353 **Early Form of Bellows Camera.** Sands, Hunter & Co.
- 354 **Early Form of Non-Collapsible Tripod Stand.** Sands, Hunter & Co.
- 355 **Warnerke's Roller Slide, model 1874.** L. Warnerke.
- 356 **Warnerke's Roller Slide, model 1879.** L. Warnerke.
- 357 **Woodbury's Dispatch Box Camera.** Mrs. George Smith.
- 358 **George Smith's Portable Camera.** Mrs. George Smith.
- 359 **The Scenagraph Portable Camera, 1876.** Mrs. George Smith.
-
- 360 **A Stereoscope, made in 1858.** Royal Photographic Society.
- 361 **Stereoscope.** Royal Photographic Society.
 Modification of the Brewster Stereoscope, by Oliver Wendell Holmes. Made by Meagher.
- 362 **The Original Sciopticon. (1872.)** Mrs. George Smith.
 The sciopticon formed the model of modern oil lamps for projection purposes. The specimen exhibited was the first to be made.

PHOTOGRAPHIC ENGRAVING IN INTAGLIO.



It is remarkable that the first practical process of photography was the method of photographic engraving discovered by Nicéphore Niépce, of Chalons-sur-Saone, about the year 1813. He used metal plates coated with a varnish of bitumen, and exposed them to light under engravings. He found that where the light acted through the paper it rendered the bitumen insoluble in its usual solvents, and thus by treating the plates after exposure with oil of lavender, he was able to produce images which could be etched by acids and printed from like ordinary engraved copper plates. Later on he also took photographs from nature on his varnished plates, but the long exposures necessary prevented his obtaining any very practical results. One of Niépce's plates and a print from it are on view, as well as a photographic image formed by bitumen on a metal support also by Niépce. It is, however, interesting to know that this first process of Niépce's is, with very slight modifications, still in use for certain purposes, though now nearly superseded by quicker methods.

The next step in photography was the Daguerreotype, and as in this process the image was produced on plates of silvered copper, the idea of etching them and producing printed impressions at once presented itself, and Fizeau, Grove, Donn  and others, produced engraved plates in this manner. The difficulty of biting the delicate Daguerreotype images to a sufficient depth and obtaining the requisite grain soon led to the abandonment of the method.

Many other direct etching methods, some founded on Niépce's process with asphaltum and other processes of chemical engraving, have been introduced from time to time, but none of them have come into extensive practical use.

A very important step in photographic engraving was made by Fox Talbot in 1852. It is specially noteworthy as being the first practical photographic process founded on Ponton's discovery of the decomposition of bichromate of potash in contact with organic matter under the influence of light. Talbot found that by the action of light, a dried film of gelatine mixed with an alkaline bichromate became impermeable to certain fluids in proportion to the intensity of the action of light upon it, and less so as the fluids were diluted with water. He coated steel plates with a thin film of gelatine and bichromate of potash, and after exposure to the light under a photographic positive, he laid an aquatint ground on the plate and then etched the photographic image with a solution of bichloride of platinum, which penetrating the gelatine film, and attacking the underlying metal more or less deeply in proportion to the solubility of the overlying gelatine in the parts acted on by light, produced an engraved plate in half-tone with all the lights and shadows of the original.

This method was worked with modifications, chiefly the use of copper in place of steel and perchloride of iron instead of the platinum salt, by Baldus, Garnier and others, but was never practically successful till about 1881, when Carl Klic effected a very notable and practical improvement by using the carbon or pigment process, as worked by Swan, for the production of his negative resists on the copper. By this means all soluble gelatine was eliminated and the biting became much more regular and even. He used copper plates prepared with a preliminary coating or "grain" of very finely powdered bitumen fixed to the plate by heat, and the etching was carried out with successive solutions of perchloride of iron of varying strengths, beginning with the strongest, which bit into the uncovered parts of the plate, while the weakest only just brought out the high lights underneath the thickest parts of the gelatine. This process is exceedingly simple and rapid and is now almost universally used for photographic engraving in intaglio to the exclusion of all the other methods.

The only other processes of photographic engraving in intaglio which need be mentioned are those based upon Paul Pretsch's method of Photo-galvanography. In this process a glass plate was coated with gelatine and bichromate, exposed to light, and then washed to remove the soluble gelatine. A mould was made of the resulting relief and electrotyped to form the printing plate. Poitevin, Placet, Fontaine, Avet, Drivet and Dallas, worked modifications of this method with considerable success, but it was always difficult and uncertain,



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and the resulting pictures were wanting in delicacy and gradation. A great improvement was brought about by Swan, who obtained his gelatine relief by means of his carbon tissue, thus eliminating all soluble gelatine and irregularities of swelling or granulation, and obtaining a relief which could be rendered conducting and electrotyped. This method was worked by Geymet, Mariot, Rousselon, Dawson, and many others, and until the introduction of Klic's process was largely used. The delay and uncertainty attending the electrotyping has caused this method to be now almost quite superseded, though it is still, however, useful for certain purposes.

J. WATERHOUSE.

- 364 Two Examples of Automatic Engraving, by T. Bolas.
Bates Anaglyptograph.
An illustration of a pre-photographic means of automatic engraving from a relief. The application of this process to photographic reliefs has been experimented upon by Mr. L. Warnerke.
- 365 Palmer's Electrotint. (1841.) T. Bolas.
This process is pre-photographic. A drawing made in oil colours on a silvered copper plate is electrotyped, this yielding by one operation an intaglio printing plate. It will be seen that it forms the physical prototype of almost all the silvered copper electrotyping processes of photo-engraving.
- 366 Arles Cathedral. C. H. Talbot.
Photoglyphic engraving, by the late H. Fox Talbot, 1866.
- 367 Vienne Cathedral. C. H. Talbot.
Photoglyphic engraving, by the late H. Fox Talbot, 1866.
- 368 View at Avignon. C. H. Talbot.
Photoglyphic engraving, by the late H. Fox Talbot, 1866.
- 369 Photo-engraving. Avignon. Royal Photographic Society.
Made by Fox Talbot, 1866, and lent to the Society's Museum by T. Bolas.
- 370 Four Photo-galvanograph Prints. Royal Photographic Society.
These are illustrations to "Photographic Art Treasures" produced by Pretsch's process, 1856. Lent to the Society's Museum by E. Clifton.
- 371 Photoglyph. Royal Photographic Society.
Lent to the Society's Museum by T. Bolas.
- 372 Intaglio Plate. Royal Photographic Society.
The first grain relief from which a proof was taken at Goupil's establishment at Asnieres near Paris, the precursor of the process as at present worked. By W. B. Woodbury.

- 373 Heliogravure. Col. Waterhouse.
By Garnier, 1868. (Dusting on process, with three bitings.)
- 374 Heliogravure. Col. Waterhouse.
By Amand Durand (circa 1868). Asphalt process.
- 375 Heliogravure. Col. Waterhouse.
Asphalt process, Royal Printing Office, Berlin. The bitumenised copper plate was exposed under a negative, developed, then etched, and finally electrotyped.
- 376 Heliogravure. Col. Waterhouse.
By Falk, Berlin. Probably by a photo-galvanographic process.
- 377 Photo-Engraving. Col. Waterhouse.
By Placet, of Paris, about 1868. Swelled gelatine process, and the film electrotyped.
- 378 Photo-Engraving. Col. Waterhouse.
By Leipold, Lisbon. (Pretsch's process.)
- 379 Photo-Engraving. Col. Waterhouse.
By Drivet, Paris. Photo-galvanograph. Shows a ruled grain.
- 380 Two Heliogravures. Col. Waterhouse.
From the Military Geographical Institute, Vienna. By Mario's process. (Photo-Electrotype.)
- 381 Two Heliogravures. Col. Waterhouse.
By Obernetter, Munich. (? Chloride of silver etching process.)
- 382 Heliogravure. Col. Waterhouse.
By Riffarth, Berlin.
- 383 Four Frames Illustrating Woodbury's Experiments in
Photo Engraving. Royal Photographic Society.
Woodbury process was the formation of a relief containing a gritty powder (rough relief) and the pressing of this against a mouldable surface, thereby producing an Intaglio plate or a model of an Intaglio plate capable of being copied by double electrotyping. Woodbury generally moulded his rough reliefs against lead (coppered or plain) or glazed cardboard, and these materials were often used by him as a means of getting one print without electrotyping. The frames contain as follows:—
- 1 Rough Reliefs.
 - 2 Direct mouldings in lead or card,
 - 3 Prints from these direct mouldings.
 - 4 Print from copper replica.
- 384 Specimens of Dallastype. Duncan C. Dallas.
The Dallas process, the details of which are a secret, yields a grain resembling aquatint, both in intaglio plates and in relief

blocks. A screen grain can also be used in combination with this grain, or, if desired, by itself. The following are examples of the Intaglio process.

- 1 A print. Engraved in 1864.
- 2 This is the plate, a portrait of Adam Salomon, from which 7,000 were printed and issued as the frontispiece to the British Journal Almanac for the year 1869. The plate was originally steel-faced, but the facing has been taken off. An impression is shown in No. 6.
- 3 These are shown to illustrate the method of cleaning the plate with the mezzotint scraper, the only tool used in the process. A is from the untouched plate. B is taken after the plate has been partially cleaned. C is the finished result.
- 5 "The Banqueting Hall, Kenilworth," from a photograph by Francis Bedford. The intaglio process requiring a negative reversed as regards right and left, this was obtained in the present instance by exposing through the glass, a more difficult feat with a wet collodion plate than with the modern dry plates. A is the original plate, from which 6,000 have been taken; B is an impression from the copper-plate; and C an impression taken from a transfer from the plate to stone. Perhaps the first photo-engraving ever printed from stone. The plate was produced in 1863, and proofs were shown at the meeting of the British Association in that year at Nottingham.
- 6 These are examples of Mr. Dallas's process for copper-plate printing by the intaglio method. Three of the examples show the application of the process to porcelain, Adelina Patti being on porcelain by Minton, and the other two subjects on porcelain by Copeland. The method (known as the "Bat" method) of applying the image of the copper plate to the porcelain may be described as follows:—"The intaglio plate is filled in with a varnish instead of ink, and wiped in the usual way. A flexible slab of glue is then applied to the plate by hand, and on being pulled away, brings with it the varnish. The slab is then laid upon the glazed porcelain and moulded to its shape by hand, and, on removing the glue 'bat,' the varnish is found transferred to the porcelain. The varnish impression is now dusted over with vitreous colour, and afterwards fired. These examples are the earliest known applications of photo-engraving to the potter's art."
- 7 These are by Mr. Dallas's intaglio process for copper-plate printing. They were made in 1863. The process was then termed photoelectric engraving. The little oval portrait on the right-hand side is of Mr. Joseph Wilson Swan.
- 8 A view of Ludlow Bridge, from a photograph by H. P. Robinson, 1863-64.

385 Heliogravures.

Col. Waterhouse.

- 1 First plate made by tannin grain. Photo-Electrotyped, 1877. (Col. Waterhouse's process.)
- 2-3 Two later specimens of the process.

386 Three Heliogravures.

Col. Waterhouse.

Survey of India Office. From negatives by Ccl. Waterhouse.

- 387 Two Heliogravures. Col. Waterhouse.
Survey of India Office. From negatives by Johnson and Hoffmann.
- 388 Five Heliogravures. Col. Waterhouse.
Survey of India Office. Enlarged from negatives by R. Waller, Sen.
- 389 Two Heliogravures. Col. Waterhouse.
Survey of India Office. Etched with a single solution of perchloride of iron.
- 390 Five Heliogravures in Colour. Col. Waterhouse.
Survey of India Office.
 - 1 Printed four colours from one plate. One printing.
 - 2 Printed in three colours. Three printings.
 - 3 Printed in two colours. Two printings. (Hills drawn on glass.)
 - 4 Printed in two colours. Two printings. (Black lithographed separately.)
 - 5 Printed in four colours. Two printings. (Black lithographed separately.)
- 391 Heliogravure. Col. Waterhouse.
Survey of India Office. Diagrams shaded by tint etching.
- 392 Heliogravure. Col. Waterhouse.
Survey of India Office. From India-ink drawings, from two negatives.
- 393 Heliogravures. Col. Waterhouse.
Two specimens by the waxed sand process, photo-electrotype. Made in England by the exhibitor, 1880.
- 394 Heliogravure. Col. Waterhouse.
One line and one half-tone subject by the waxed sand photo-electrotype process. Survey of India Office, Calcutta, 1885.
- 395 Heliogravure. Col. Waterhouse.
Survey of India Office. Printed in two colours on one plate.
- 396 Heliogravure. Col. Waterhouse.
Survey of India Office. Reproduction of a pencil drawing.
- 397 Heliogravure. Col. Waterhouse.
Survey of India Office. Reproduction of a fine shaded drawing.
- 398 Heliogravure. Col. Waterhouse.
Survey of India Office. From original drawings of microscopic sections of tissues.
- 399 Heliogravure. Col. Waterhouse.
Survey of India Office. From photographs.
- 400 Heliogravure. Col. Waterhouse.
Survey of India Office. From negative by Major St. G. Gore, R.E.
- 401 Heliogravure. Col. Waterhouse.
Survey of India Office. View of the Jami Masjid, Jampore.

- 402 Two Heliogravures. Col. Waterhouse.
Modern, by Blechinger, Vienna.
- 403 Thio-Carbamide Reversal Process. Col. Waterhouse.
Comparative examples. Reproduction of an Indian-ink drawing. Survey of India Office, Calcutta, 1885.
1 By the ordinary process.
2 By the thio-carbamide reversal process.
- 404 Thio-Carbamide Reversal Process. Col. Waterhouse.
Plate and proof. Survey of India Office, Calcutta, 1885.
- 405 Photo Etching. Royal Photographic Society.
A rough, untouched print, presented by Colonel Waterhouse, of a photo engraved plate from a direct positive reversed with Phenylthio-carbamide. (Calcutta, August, 1890.)
- 406 Photo Etching. Royal Photographic Society.
A rough, untouched print, presented by Colonel Waterhouse, of a photo engraved plate from a direct positive reversed with Phenylthio-carbamide. (Calcutta, 1890.)
- 407 Machine Printing of Intaglio Plates. T. Bolas.
Specimen given with "Photo. Gazette," 15th July, 1894.
- 408 Examples of Photogravure. Paul Pretsch, 1859. E. W. Foxlee.
"I pays!" Negative by O. G. Rejlander. The Undercliffe, Isle of Wight.
Negative by Roger Fenton.
- 409 Examples of Photogravure. E. W. Foxlee.
Etching method, 1886, by E. W. Foxlee. Etching done with one solution only. Negatives, transparencies and plates absolutely untouched.
- 410 "Photographic Art Treasures." J. M. Turnbull.
'The covers and one picture (Raglan Castle) from the first number of "Photographic Art Treasures," a periodical, only one or two numbers of which were published. The illustration is an early specimen of photo-engraving by Paul Pretsch, the original photograph being by Roger Fenton. December 1856.
- 411 Print by the Photo-Galvanographic Process. T. Bolas.
Frontispiece to the fifth Edition of Hunt's Manual of Photography, 1857.
- 412 Negatives, Blocks, Plates and Prints, to illustrate L. Warnerke.
the system of photo-engraving by the aid of the silver salts.
- 413 Photogravure plate of Mulready's picture A. Ernest Smith.
"Choosing the Wedding Gown,"
untouched.
Awarded gold medal in Society of Arts Competition, 1895.

- 414 Transparency of same subject. A. Ernest Smith.
 415 Negative of same subject. A. Ernest Smith.
 416 Photogravure Print, untouched, of the same subject. A. Ernest Smith.
 417 Photogravure Plate and Print from same. The Autotype Co.

PHOTO-LITHOGRAPHY.

A lithographic transfer is obtained by a process based upon the reaction utilized in collotype, the impression is transferred to stone, the subsequent proceedings being pure lithography.

Photo-zincography is identical save that a zinc surface is printed from instead of stone. The term is often applied to zinc relief block printing, but is not so used herein.

- 418 Two Photo-Lithographs. Walter Pouncy.
 By J. Pouncy, without transfer, matt surface, 1859.
- 419 Photo-Lithographic Transfer, 1863, and Col. Waterhouse.
 Photo-Lithographic Proof, 1859, both
 by J. W. Osborne. Some of the
 earliest photo-litho. work.
- 420 Nine Photo-Lithographs. Bullock Bros.
 1 Wood at Kenilworth. 6 Ashow Village.
 2 Woodland Scene. 7 Part of St. Mary's Church, Warwick.
 3 Kenilworth Castle. 8 East Gate, Warwick.
 4 Stoneleigh. 9 A Ruin.
 5 One of the Lodges, Stoneleigh Abbey.
 Produced by Bullock Bros.' process, patented in 1866, No. 2954.
- 421 Asser Process. Col. Waterhouse.
 Photo-lithographic transfer, by means of starch. Three specimens by
 Simoneau and Tovey, Brussels.
- 422 Asser Process. T. Bolas.
 A Transfer. } Sample made at the Cantor
 B Print from the lithographic stone. } lectures, 1878.
- 423 Asser Process. T. Bolas.
 Reproduction by Asser.
- 424 Exhibits of the Asser Process of Photo-Lithography. S.H. Horgan.
 (a) An exposed print on starch-coated paper sensitized with bichromate
 of potash.

- (b) The exposed print after washing in water and before inking.
- (c) An exposed, washed, and inked print, now a lithographic transfer.
- (d) Litho print from an Asser transfer to stone.

- 425 Early Photo-Lithography, by Ramage Col. Waterhouse.
(circa 1867).
- 426 Photo-Lithograph, by Eckstein's Process, 1867. Col. Waterhouse.
The grain was obtained by ruling, and etched on the stone. This process was worked at the Photographical Bureau, The Hague.
- 427 Early Photo-Lithograph, by Leth, Vienna Col. Waterhouse.
(circa 1868).
- 428 Photo-Lithograph, by Marie, Paris (circa 1863). Col. Waterhouse.
Asphalt process. Printed from more than one stone.
- 429 Two Photo-Lithographs, by Reiffenstein and Col. Waterhouse.
Rosch, Vienna (circa 1868).
Asphalt process.
- 430 Photo-Lithographic Transfer in Half-Tone. S. H. Horgan.
Made in 1879 with single line screen, 84 lines to the inch.
- 431 Half-Tone on Stone. S. H. Horgan.
The first picture is an ordinary half-tone on stone. From a second negative the second picture is made to reinforce the first one. By printing the second on the top of the first it strengthens the shadows and takes the place of the overlay used in woodcut printing. The third print shows the combination. Made in 1876 by S. H. Horgan.
- 432 Photo-Lithograph. T. Bolas.
Portraits of Belloc and Jacott, forming a frontispiece to their work, "La Photographie," and an example of photo-lithography by their process.

COLLOTYPE.

The bichromated gelatine film after exposure to light and wetting repels a greasy ink. This property is made use of in a manner resembling that of the lithographer.

- 433 Photo-Collotype. Col. Waterhouse.
By Tessier du Mothay and Marechal (circa 1868).
- 434 Collotype, Surveyor-General's Office, Calcutta Col. Waterhouse.
(circa, 1874).
- 435 Collotype Skin and Proofs. Col. Waterhouse.
Surveyor-General's Office, Calcutta (circa 1874).
1 The printing surface (on a paper support). The coating was composed of gelatine tannin and soap, sensitised with bichromate of potash.

- 2 Print from a collotype plate (zinc support); coating being of gelatine and bichromate alone.
 - 3 Print of a collotype plate (copper support); coating being of chrome alum and gelatine, sensitised with bichromate.
 - 4 Proof from a collotype plate (zinc support); coating being of gelatine and tartaric acid, sensitised with bichromate.
 - 5 Proof from a collotype plate (zinc support); coating being of gelatine and formic acid, sensitised with bichromate.
 - 6 Print from a collotype plate (glass support); coating being of gelatine, mercuric chloride, glycerine, and glucose, sensitised with bichromate of potash.
-
- 436 Early Collotype. Col. Waterhouse.
Gelatine tannin and soap, on glass support. Surveyor-General's Office, Calcutta (circa 1874).
- 437 Early Collotype. Col. Waterhouse.
Gelatine and chrome alum, on glass support. Surveyor-General's Office, Calcutta, 1874.
- 438 Collotype. Col. Waterhouse.
By Carlos Relvas, Gollega, Portugal (circa 1881.)
- 439 Collotype. Col. Waterhouse.
By Gemoser and Watti (circa 1881).
- 440 Two Collotypes, by Jacobi, Venice (circa 1881). Col. Waterhouse.
- 441 Three Collotypes. Col. Waterhouse.
Gelatine and chrome alum, glass support. Survey of India Office, Calcutta, 1884.
- 442 Coloured Collotype. Col. Waterhouse.
By E. Sieger, Vienna, 1888.
- 443 Two Heliotypes. Col. Waterhouse.
Collotype process worked by Ernest Edwards.
- 444 Collotype Plates shewing three stages of the process. The Autotype Co.
- 445 Photo-Zincograph, with Collotype Grain. Col. Waterhouse.
The half-tone collotype was transferred to zinc. Survey of India Office, Calcutta, 1885.
- 446 Photo-Zincograph. Col. Waterhouse.
Reproduction of a minute, by Warren Hastings and Mr. Baiwell, 1776. Made in the Survey of India Office, Calcutta, 1887.
- 447 Photo-Zincograph. Col. Waterhouse.
Transfer from an electrotyped (sand grain) heliogravure plate to zinc, 1886. Survey of India Office, Calcutta.

PHOTO-TYPOGRAPHIC ENGRAVING IN RELIEF.

To Niepce must be credited the idea of making a photographic image form a resist for etching, by taking advantage of the light sensitiveness of bitumen.

The bitumen process, however, had the great drawback of requiring prolonged exposures, which unfitted it for quick and regular work. In photo-lithography and photo-zincography with bichromated gelatine or albumen a much more rapid process was worked out.

The half-tone process is the most interesting and important of the relief photo-engraving processes of the present day. The early experimenters may be divided into two distinct sections, the one endeavouring to translate the half tones of the photograph by forming a natural grain, by dusting the metal plate with resin or asphalt, by incorporating gritty matter with the sensitive film, or by taking advantage of the reticulation of the gelatine film, as in the Pretsch and Dallas processes; the other aiming at the formation of grain in the negative by placing in front of the sensitive plate a "screen." Experience has shown that the latter is the most reliable way for regular commercial work.

The first suggestion to break up the tones of the photograph by means of a screen was by Fox Talbot, who, in his patent dated 1852, describes his method of placing muslin, crape, etc., between the negative and the sensitive metal surface which was to be etched. He instanced, as one way, that a glass plate might be covered with opaque lines. Several experimenters appear to have taken up Fox Talbot's idea, among them Berchtold, in France, and C. J. Burnett, in this country, in 1857 or 1858. Baron F. W. von Eggloffstein was making experiments in the manufacture and use of ruled screens in Philadelphia in 1861, and some of his work is shewn. It was also in Philadelphia that the fundamental principles of the modern process were worked out by F. E. Ives. The enamel process of half-tone etching was first worked by an Englishman named Purton (now deceased), and it is there that the screens now universally used are manufactured by Max Levy.

The patent of E. & J. Bullock for half-tone methods in 1865 should be mentioned, as also that of Swan in 1879, being evidence of the part which English workers took in furthering process work. Swan anticipated by three years the process commonly ascribed to Meisenbach

of using a single line screen and turning it 45° during the exposure. However, Meisenbach founded in London and in Munich the first firms to work the half-tone process successfully. Woodbury was an indefatigable experimenter in half-tone blockmaking, and several examples of his work are shewn. He experimented with gauze and in several other ways to impart a mechanical grain to his Woodbury relief. The most practical application of Woodburytype to process blockmaking was by Ives in 1878, who found an ingenious method of obtaining a graduated grain, but there were difficulties in carrying it out practically, and he found greater possibilities in his idea of about 1878, obtaining the same graduated dot effect by the use of a ruled cross-line screen. Ives further established the principle that the character of the dots formed by the light passing through the apertures of the screen was influenced by the shape of the diaphragm. Further it has been shown that the character of the dots and consequently of the whole negative is influenced by the distance of the screen from the sensitive plate. The better understanding of the conditions governing the screen and diaphragm has led to wonderful strides being made during the last few years.

Its success has also been aided by the adoption of the enamel process. This consists of coating the metal plate with bichromated fish-glue, and after exposure and development, washing out the unexposed parts, drying and strongly heating the plate until the film is baked to an enamel-like hardness, in which condition it withstands etching. This process has been successfully applied to copper, etching being performed with perchloride of iron.

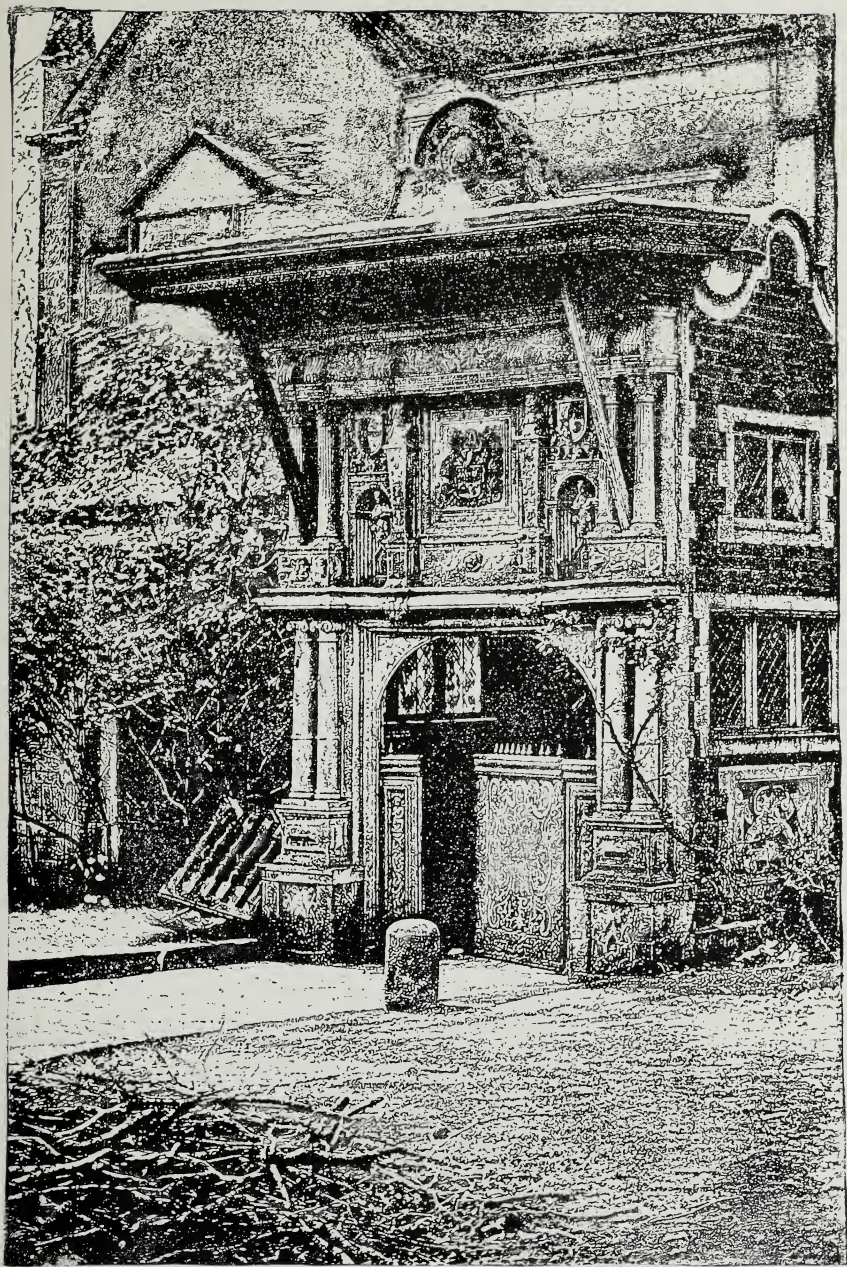
Half-tone process has been brought to a high degree of perfection and utility by the fortunate combination of circumstances, not the least of which is the fact that the time was ripe for such a process, the enormous increase of cheap literature in recent years having created a demand for an economical and rapid means of illustrating. The universal use of photography moreover demanded a process of reproduction which should be equally faithful.

WILLIAM GAMBLE.

448 Photo-typography.

Royal Photographic Society.

This frame contains a number of prints from various experimental blocks made by Woodbury in his endeavours to obtain satisfactory Photo-relief blocks. They illustrate the difficulties which have to be encountered in the process, notably the defect which is apparent in so many of the earlier reliefs, the white line or margin to the shadows, caused by the inked surface from which the print was to be made not being level.

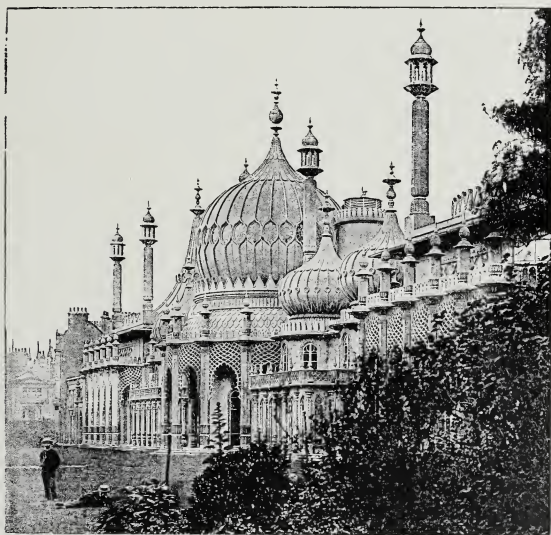


Print from a Pretsch block in the "Photographic Journal," November 15th, 1860.

Lent by T. Bolas.

- 449 **Brunner's Process.** T. Bolas.
Ready grained negative plates. The screen effect was impressed on the gelatino bromide plate during the manufacture, and screen negatives were then obtained without further special treatment.
- 450 **Luxotype. Process of Brown, Barnes and Bell.** T. Bolas.
 The grain is produced by mechanically graining a print (as by impression against wire gauze); this is obliquely lighted with a strong light, by which means the grain negative is produced.
- 451 **Examples of Half-tone Process Block work,** E. W. Foxlee.
 untouched. Paul Pretsch, 1860.
- 452 **A Half-Tone made in 1865 by Gen. Frederick** S. H. Horgan.
W. von Egloffstein.
 This half-tone was produced with a screen about 150 lines to the inch. The lines were undulating. The back-ground was ruled in by machine.
- 453 **Process invented by Gen. F. W. von Egloffstein.** S. H. Horgan.
 Photographic print from a negative enlarged twice the size, the original being a positive made by von Egloffstein. The latter's method of making a positive, in this instance, is obvious from this enlargement.
- 454 **Portrait of Gen. von Egloffstein, from** S. H. Horgan.
U.S. Government War Records.
 Notices of General von Egloffstein's early work, and his use of a ruled glass screen so early as 1861, will be found in Wilson's Photographic Magazine for 1895, Vol. XXXII., p. 132, and Anthony's Photographic Bulletin for 1895, Vol. XXVI., pp. 137 and 175.
- 455 **Half-Tone on Steel.** S. H. Horgan.
 The coat and background are ruled in with machine as in ordinary steel engraving.
- 456 **First pure Half-Tone Printed in a Daily Newspaper.** S. H. Horgan.
 Made March 3rd, 1879, and published in the New York *Daily Graphic*. The process was photo-lithography, a single line screen, 70 lines to the inch, being used. In this print the high lights were not painted or "stopped" out, neither were the blacks painted in, the result as shown being entirely photographic.
- 457 **Copy of New York Weekly Tribune.** S. H. Horgan.
 Printed at a speed of 20,000 per hour. The paper and ink used is of the commonest, and still it will be seen that half-tones print fairly well at that speed of impression. The type is stereotyped, the half-tones are originals, the method of inserting the half-tones in curved stereotype plates being the invention of the exhibitor.
- 458 **Three Pulls from Half-Tone Relief Blocks.** Col. Waterhouse.
 The grain was obtained with bitumen, by dusting on copper, and a positive resist employed, *i.e.*, the reverse of the ordinary heliogravure process. By A. W. Turner, Survey of India Office, Calcutta, 1892-3.

- 459 Pulls from Half-Tone Blocks. Col. Waterhouse.
Grain obtained with a ruled screen. Bitumen on zinc. By A. W. Turner, Survey of India Office, Calcutta, 1892.
- 460 Print from a Half-Tone Block. Col. Waterhouse.
Obtained with a dust grain (Sommer's process), by the Military Geographical Institute, Vienna, 1886.
- 461 Print from a Half-Tone Block. Col. Waterhouse.
Obtained with a screen. By Riffarth, Berlin.
- 462 Photo-Relief Process. Royal Photographic Society.
An impression made by bringing an elastic slab with a grained surface upon a plaster relief. This is an illustration of one of Ives' earlier processes for reproducing, in grain, the half-tones of a photograph.
- 463 Examples of Dallastint. Duncan C. Dallas.
The process has been already referred to (See No. 384).
1 Pulls of blocks suitable for printing on fast machines, 1870 to 1883.
2 Page from "The Garden," 1882, containing a print from a stereo of a relief block made direct from the object itself.
3 Two photomicrographs of rock sections taken by Dr. Foulerton, about 1884. Block, made in 1875. The illustration herewith has been printed from this block—"The Pavilion at Brighton."



A Print from the Block made in 1875. (No. 3, 463).

- 4 Coarse grain block, suitable for newspaper work, printed in the "Farming World," June 21, 1884.
- 5 An impression from an india-rubber stamp. Five thousand copies printed in glycerine ink by the exhibitor himself, and issued with the "Photographic News," December 24, 1886. The block itself is seen in No. 463, 21.
- 6 From an old coloured aquatint, "The Progress of Steam," by Aitken. 1882.
- 7 The top one is a considerable reduction from a pen and ink line drawing. The bottom one is a reduction from a wash drawing in black and white, by Alfred Parsons. September 1, 1883.

[illegible][illegible]

Dallastype Block reduction of two pages of a Pearl Reference Bible.

- 8 From a sepia drawing by C. Hancock, printed in three workings, 1876. The entire subject is in the light tint seen in the sky. The blocks for the other printings are identical with the first, except that parts not required are etched away.
- 9 Reduction from a water colour drawing by Walter Crane. Five workings operated as in the foregoing—five identical blocks being made and the portions in each not required being etched away.
- 10 Frame of four specimens from photo-relief blocks, by the exhibitor. The right-hand subject, "At the spring," was done in 1866; the others about 1865-70. All are from pen and ink drawings.
- 11 View of Strasburg Cathedral, from a line engraving by Hollar, issued with the "Portfolio" about 1870.
- 12 Two reproductions from relief blocks of pen and ink drawings by Walter Crane, printed on Japanese vellum and Japanese silk paper respectively.

- 13 Reduction of the 32-page issue of "La Lanterne," done for M. Rochefort after his escape from New Caledonia. The copies were reduced as shown, and sent from Brussels by pigeon into Paris, 1st August, 1871.
- 14 Two reproductions in half-tone by the exhibitor's relief process, printed with the type. They are made from albumen prints. May, 1878.
- 15 Three examples of the application of Dallastype blocks to embossed work. Also the original block elsewhere. The portrait is a Dallastint embossed on leather for bookbinding.
- 16 Two prints on fabric. The one on violet satin is printed in a varnish ink, and then bronzed. The one on a coarse fabric is ordinary printing ink. Designed to show application to calico printing, etc.
- 17 Proof taken from stone, transferred from a Dallastint block.
- 18 *Print from Stone*.—An enlargement from the block printed herewith. For posters and similar purposes.



Printed from a Dallastint Block.

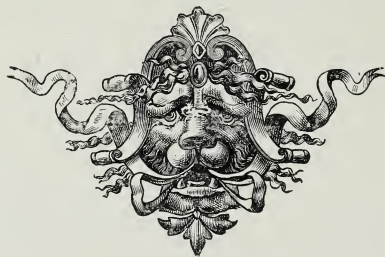
- 19 *A Collotype Print from Colloid Coating on Stone*. Printed with a special ink at a lithographic press. 1877.
- 20 *A Paper Mould*.—From Dallastint blocks and type used for stereotyping.
- 21 The original india-rubber stamp from which the specimen No. 5 was printed. An edition of 5,000 was taken by hand by the exhibitor from this block with an india-rubber roller and glycerine ink. Printed on an Albion press.
- 22 Copy of a play of the First Folio, 1623, edition of Shakespeare in the British Museum, "The Tempest."
- 23 Two Dallas-type blocks, 1870. These are amongst the first blocks prepared photographically for book binding purposes. These are the originals from which thick electros were made and used in the Arming press.
- 24 A zinc block. This and that moulded in No. 20 are amongst the earliest examples of photozincotype for letterpress printing, 1863.

- 464 Compound Transparent and Semi-transparent Diaphragms. E. Sanger Shepherd.

For use in making negatives for the half-tone Engraving process; a device for securing by one exposure the same effect in the resulting negative as now obtained by two or more separate exposures with stops of varying aperture. The diaphragm consists of a piece of selected microscopic cover glass coated with an even film of suitably coloured collodion (Brilliant Green extra, for example), the smallest aperture required being scraped clean through the film in the centre of the stop, which is then balsamed in optical contact with a similar piece of glass. The large stop is formed either by a loose Waterhouse stop, or a paper mat with suitably shaped aperture cemented to the compound glass diaphragm.

- 465 Transparent Colour Cross-line Screen, for half-tone process engraving. Fred E. Ives.

The lines are ruled in collodion film coloured with "brilliant green" dye. Two single line rulings are cemented together face to face, crossing the lines. With this screen, the closing up of the high-light dots is accomplished by the light directly transmitted through the coloured lines where not crossed, and by this means the injury to definition of detail and outline due to diffraction in ordinary black cross line screen work is practically reduced to about one-fourth.





AGAINST THE STREAM.

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❧ Lenses. ❧

NOTE.—In the diagrams of lenses which follow, except those of Messrs. C. A. Steinheil Sohne, an uniform system of indicating the nature of the glass employed by means of the shading has been adopted.

Flint glass is indicated thus:—

Crown glass of low refractive power, thus:—

Crown glass of high refractive power, thus:—

(These two are used indiscriminately in lenses made before the introduction of the new Jena Glass.)

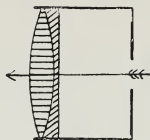
Extra light flint glass, thus:—



-
- | | | |
|---|---|-----------------------------|
| 1 | Set of Prisms. | A. W. Dollond. |
| | Made by John Dollond, the inventor of the Achromatic Lens, to illustrate the principles of Achromatism. | |
| 2 | Collection of Specimens of Jena Glass. | Royal Photographic Society. |
| 3 | Water Lens.
A double convex fluid lens. | Royal Photographic Society. |
| 4 | Single Lens.
By Ross, whole plate, once the property of A. Rosling, Esq. | J. Sterry. |

5 Early Form of Doublet by Chevalier.

C. H. Barden.



Early Form of Doublet by Chevalier.

6 Water Lens.

Royal Photographic Society.

This is the water lens in its simplest form, being composed merely of a clock glass fastened on to a piece of plain glass with a piece of putty. The specimen was at one time the property of Daguerre, and was probably used as a condenser.

7 The First Lens specially made in England for Portraiture.

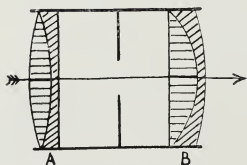
Royal Photographic Society.

This was constructed in 1841, by Andrew Ross, for Henry Collen, an early licensee of the Talbot-type Process. It was of doublet form, the back lens B was employed by itself for landscape work, the front lens being inserted, and the two used together for portraiture. In this latter case the paper upon which the image was received was not flat, but was pressed between two curved plates of glass, to admit of a larger aperture being employed. The lenses are screwed into their mounts, and united not by Canada balsam as is usual, but by a film of castor oil. Lent by Messrs. Ross & Co. to the Society's Museum.

8 Portrait Lens.

Ross, Ltd.

A portrait or Cabinet Lens as now made, practically the same as when introduced by Petzval in 1840.



7. The First Lens specially made in England for Portraiture.



8. Portrait Lens.



10. Single Landscape Lens.



9 A Derogy Lens.

Joseph Tilfor.

A half-plate portrait combination, having bayonet joints instead of the usual screws, and two extra lenses for inserting between the others to lengthen or shorten the focus. The front lens can be used for landscapes, with or without one of the extra lenses, making altogether six different combinations.

10 Single Landscape Lens.

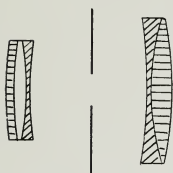
Ross, Ltd.

Manufactured by Andrew Ross. 20 inches focus for 15×12 plates. Largest aperture $f/20$. This lens is one of a series of seven, the focus of these ranging from 9 to 30 inches. Lent to the exhibitors by Messrs. Morley & Cooper.

11 Archer's Fluid Lens.

Royal Photographic Society.

This is a doublet, each combination consisting of a meniscus shell filled with fluid. It is the property of Messrs. Ross & Co., and is lent by them to the Museum of the Royal Photographic Society.

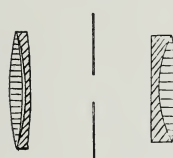


Orthographic Lens.

12 Orthographic Lens.

Ross, Ltd.

Made by Andrew Ross from the formula of Professor Petzval, about 1859. This lens is one of a series of eight; the focus ranged from 8 to 34 inches, covering plates from 6×5 to 21×21 inches. The exhibited specimen is of $16\frac{1}{2}$ inches back focus. The largest aperture is $f/14$, and it was advertised for 12×10 views, or $8\frac{1}{2} \times 6\frac{1}{2}$ groups. Lent to the exhibitors by Messrs. Morley & Cooper.



Stereographic Lens.

13 Stereographic Lens.

Ross, Ltd.

Practically the same lens as the compound stereo lens which has been made until quite a recent date. It is somewhat similar in form to the Petzval portrait lens, and was adapted for instantaneous work with wet plates. Working aperture $f/4$.

14 Quick-Acting Stereo. Landscape Lens.

J. H. Dallmeyer, Ltd.

Issued in 1860 by J. H. Dallmeyer, in five focal lengths, from $4\frac{1}{2}$ to 8 inches. A cemented single combination, consisting of two glasses, heavy flint and hard crown. An improvement at the date in rapidity, $f/8, f/10$ and covering power upon the existing single landscape lenses.

15 A Stereoscopic pair of Dallmeyer's Patent Lenses.

J. Sterry

Selected by Rev. T. F. Hardwich, 1860.

16 Quick-Acting Portrait Lens.

J. H. Dallmeyer, Ltd.

Issued in 1860 by J. H. Dallmeyer. Constructed upon Petzval's form of 1840. First issued for stereoscopic views of 5 inches focal length. Rapidity



Quick-Acting Portrait Lens.



TAKEN ON A CURVED FILM WITH SUTTON'S PANORAMIC WATER-LENS
AND CAMERA, BY JAS. A. SINCLAIR.

$f/4$, and angle 45° . Subsequently made up to 16 inches focus. Special feature—the fine correction for spherical aberration. Discarded in 1866 for the Patent Portrait lens.

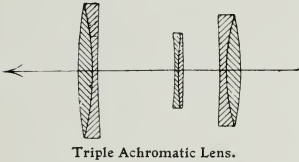
- 17 2 B. Dallmeyer Portrait Lens. 1863. J. Sterry.

- 18 Extra Quick-Acting Portrait Lens. J. H. Dallmeyer, Ltd.

Issued in 1860 or 1861 by J. H. Dallmeyer. Also of the Petzval form, but the most rapid lens ever made, $f/2.2$. Issued in three sizes, of 3, 6, and 8 inches focus. Still largely used on account of its extreme rapidity in modern cinematographic work.

- 19 Triple Achromatic Lens. J. H. Dallmeyer, Ltd.

Issued in 1861. In two rapidities; the more rapid ($f/4$), termed the "triple group lens," was discarded for the Patent Portrait lens, but the less rapid ($f/10$) was issued in focal lengths of from 5 to 50 inches, covering an angle of 60° . It is claimed for this that it was the *first* non-distorting lens, and gave a flatter field and better correction for astigmatism than any lens made, until the introduction of the new Jena glass. The lens was largely supplanted by the "Rapid Rectilinear," introduced in 1866, on account of the greater rapidity of the latter.



- 20 Dallmeyer Triplet $7\frac{1}{2} \times 5$. 1864. J. Sterry

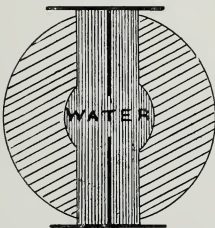


Actinic Triplets.

- 21 Actinic Triplets. Ross, Ltd.

Introduced in 1861. These were made in ten sizes, covering plates from $6\frac{1}{2} \times 4\frac{3}{4}$ to 30×24 , and the focus ranged from 7 to 34 inches. The one exhibited is No. 7 of the series, and is of 22 inches back focus, and covers a plate 18×16 . They were suitable for all general work, but the working aperture, $f/16$, caused them to be superseded by the doublets, which came out a few years later.

- 22 Sutton's Panoramic Water Lens. Ross, Ltd.

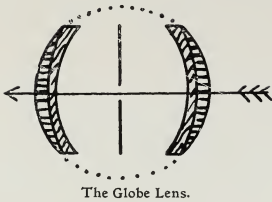


Sutton's Panoramic Lens. (1860.)

Invented by Thomas Sutton, 1860, to include an angle field of 100° and upwards. It is essentially a cylindrical shell of glass of great thickness. The internal cavity being filled with water, the glass shell, being a lens with concentric surfaces, acts as a concave lens, the central sphere of water as convex lens. By employing light flint glass the lens is achromatic when the inner radius of the shell is about one-half the length of the outer radius. The diaphragm is peculiar, being elliptical, with two upright thin radiating portions, like the wings of a butterfly. These stop some of the light of the central pencils, making the beam cylindrical—interfering less with the marginal pencils, which are also almost cylindrical. Even lighting is thus secured, on a curved plate, the apparatus for which is also shown. (Brit. Jour., 1861, p. 324.) See p. 52.

23 The Globe Lens.

Royal Photographic Society.



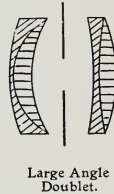
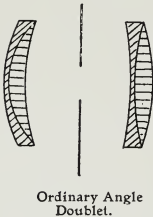
Stereoscopic pair of globe lenses, by Harrison and Schnitzer, of New York, patented June 17, 1862. Known as the Globe Lens, because the exterior surfaces form part of one sphere. The defects of this form were spherical aberration and flare, but it enjoyed no small amount of popularity when first introduced.

24 Actinic Doublets.

Ross, Ltd.

Introduced in 1864. Their improvement lay in their greater rapidity. Three forms are exhibited. They were amongst the first lenses to have both combinations cemented.

- 1 The S. A., or Small Angle Doublet. This corresponds very nearly with the modern rapid symmetrical lens. The angle embraced was from 40° to 50° , and the working aperture $f/8$. The one shown is of 14 inches focus, and covers a plate $8\frac{1}{2} \times 6\frac{1}{2}$ inches.



- 2 The O. A., or Ordinary Angle Doublet. The angle subtended with this series was from 60° to 75° . This form of doublet was always fitted with a small internal shutter near the wheel diaphragm. The exhibited lens is for plates $6\frac{1}{2} \times 4\frac{3}{4}$, and works at $f/16$.
- 3 The L. A., or Large Angle Doublet. This series worked at $f/16$, and corresponds to the modern wide-angle lenses. The angle subtended was from 80° to 95° . The lens shown is of $4\frac{1}{2}$ inch focus, and was intended for a plate $8 \times 4\frac{1}{2}$ inches.

25 Wide-Angle Landscape Lens.

J. H. Dallmeyer, Ltd.

Issued in 1865. Patent (J. H. Dallmeyer) No. 2539. Made in eleven focal lengths of from $5\frac{1}{4}$ to 36 inches. Rapidity $f/15$, free from spherical aberration, with angle of 75° . A single lens of three cemented components. Chief features are, the wide angle, included for purely landscape work, and the fine and brilliant definition generally, and at the margins. The slight marginal distortion is not noticeable in the class of work for which it was constructed.

26 Periscope.

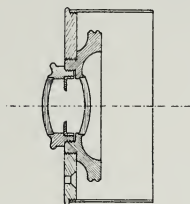
C. A. Steinheil Sohne.

Symmetrical construction of 1865, consisting of two simple crown glass lenses, $f/13.5$. The original (1865) mounting is intentionally retained in the specimen shown.

27 Goddard Landscape Lens.

Royal Photographic Society.

This form was introduced by Goddard in 1865. The specimen is of



26. Periscope.



27. Goddard Landscape Lens.

15 inches focus, covering 12×10 plate. It is provided with three stops, $f/22$, and $f/27$, and $f/40$ approximately. Presented to the Society's Museum by F. Haes, Esq.

28 Patent Portrait Lens.

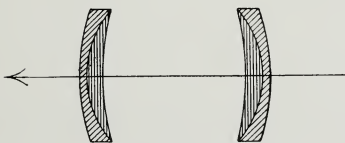
J. H. Dallmeyer, Ltd.

Issued in 1866. Patent (J. H. Dallmeyer) No. 2502. Made in three rapidities, $f/3$, $f/4$, and $f/6$, and including angles of 50 to 55° . Issued in sizes from 5 to 37 inches focus. The lens covers a greater angle than the Petzval form, but is so constructed that a certain degree of spherical aberration may be introduced at will, to produce softness in the image when required.

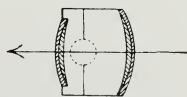
29 Rapid Rectilinear Lens.

J. H. Dallmeyer, Ltd.

Issued in 1866. Under patent (J. H. Dallmeyer) No. 2802. The original Rapid Rectilinear. Made originally of two rapidities, $f/4$ and $f/8$. The former was exhibited at the Photographic Society, but not issued commercially; the latter in fourteen focal lengths of from 4 to 48 inches. It replaced the "Triple Achromatic" as a non-distorting lens, free from spherical aberration at a larger aperture. Is composed of two symmetrical lenses, either of which may be used as a long focus landscape lens. A new optical glass, an extra light flint, was specially made by Messrs. Chance Brothers, of Birmingham, at the inventor's instigation, in order to attain the most perfect results.



29. Rapid Rectilinear Lens.



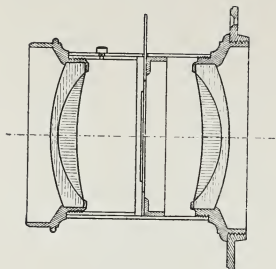
30. Wide-Angle Rectilinear Lens.

30 Wide-Angle Rectilinear Lens.

J. H. Dallmeyer, Ltd.

Issued in 1866. Patent (J. H. Dallmeyer) No. 2502. Made in eleven focal lengths of from 2 to 18 inches. Aperture $f/15$, and covers an extreme angle of 100° .

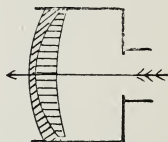
31 Aplanat.



31. Aplanat.

C. A. Steinheil Sohne.

Series III., $f/7$, symmetrical construction of 1866. Two cemented achromatic lenses, 28 cm. focus. The lens has an arrangement for adjustment of the distance between the combinations.



32. Grub A. O., Single Lens.

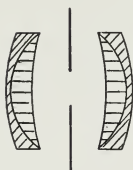
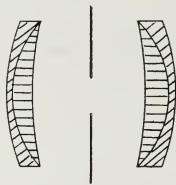
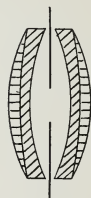
32 Grub, A. O., single lens.

Royal Photographic Society.

33 The Rapid ($f/8$). Symmetrical.34 Extra Rapid ($f/5.6$). Symmetrical.35 Portable ($f/16$). Symmetrical.36 Wide-Angle ($f/16$). Symmetrical.

Ross, Ltd.

These were introduced in 1874-5, and superseded the old form of Actinic Doublet, because of their greater definition, combined with flatness of field. The form of these lenses is now substantially the same as when

The Rapid ($f/8$).
Symmetrical.Extra Rapid ($f/5.6$).
Symmetrical.Wide-Angle ($f/16$).
Symmetrical.

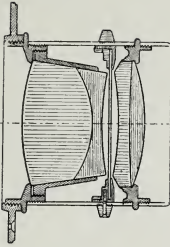
introduced, but owing to the introduction of new sorts of glass, their component parts have been slightly modified. There are 46 varieties listed of these four forms.

37 Rectilinear Portrait Lens.

J. H. Dallmeyer, Ltd.

Issued in 1878. J. H. Dallmeyer's patent No. 2502. Made in two sizes of 6 and 8 inches focal length. Aperture $f/3$. The chief feature is its high intensity, both combinations being cemented, *i.e.*, with four reflecting surfaces only.

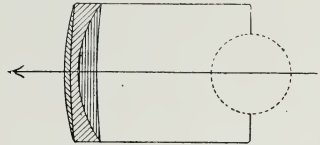
38 Group.



38. Group.

C. A. Steinheil Sohne.

Series II. Antiplanat, $f/6.5$. Unsymmetrical construction of 1881. Two cemented lenses, the front lens positive, the back lens negative. 21 cm. focus. Iris-diaphragm.

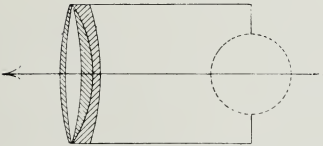


39. Rapid Landscape Lens.

39 Rapid Landscape Lens.

J. H. Dallmeyer, Ltd.

Issued in 1884 (T. R. Dallmeyer), under Patent No. 2539. Aperture $f/11$. Made in nine sizes. Focal lengths, 5 to 30 inches, including an angle of 60° . By the employment of different glasses a higher intensity is obtained than in the "Wide-Angle Landscape," and the foci of the lenses are comparatively much longer than the latter for the size of plate they are designed for.



40. Rectilinear Landscape Lens.



41. Wide-Angle Single Lens.

40 Rectilinear Landscape Lens.

J. H. Dallmeyer, Ltd.

Issued in 1888. Patent (T. R. Dallmeyer) No. 1583. Made in seven focal lengths, $8\frac{1}{2}$ to 32 inches. Aperture $f/14$. Angle 60° . A combination, mounted in a single cell, with the diaphragm in front, yet free from distortion.

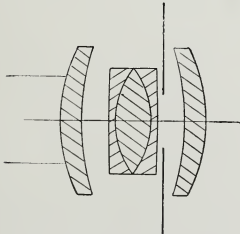
41 Wide-Angle Single Lens.

Ross, Ltd.

Introduced in 1890. $f/16$. This lens is made from the newer varieties of glass, and consists of three single lenses cemented together. They are constructed for an angle of 70° and upwards.

42 Zeiss Apochromatic Triplet ($f/6.3$).

Carl Zeiss.

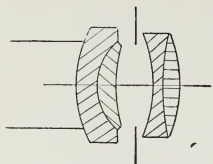


Apochromatic Triplet, $f/6.3$.
Nat. Size 100 mm. ($4''$) focus.

This was the first of the new photographic lenses produced by Zeiss, and was patented in 1890. It was made both in the symmetrical and dissymmetrical forms. The correction for spherical aberration was good, the secondary spectrum was very perfectly eliminated, and it worked with large aperture. Its manufacture was soon discontinued, as it was found that, owing to the imperfect correction for oblique pencils, it presented no marked advantages over the ordinary rectilinear type. English patent, 6029/90. German patent, 55313.

43 Zeiss Anastigmatic Lens. Series III.

Carl Zeiss.

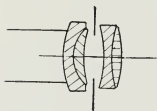


Wide-angle doublet, consisting of four lenses. Issued in 1890, in 9 focal lengths, from 96 mm. ($3\frac{3}{4}$ in.) to 586 mm. (23 in.) These lenses, more rapid than Series I. and IIa, may be regarded as a transition between them and the wide-angle doublets. English patent, 6028/90. German patent, 56109.

Anastigmat. Series III. $f/7.2$.
Nat. Size 100 mm. ($4''$) focus.

44 Zeiss Anastigmatic Lens. Series IV.

Carl Zeiss.

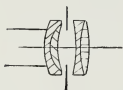


Issued in 1890, in 10 focal lengths, from 62 mm. ($2\frac{1}{2}$ in.) to 1,228 mm. ($48\frac{1}{2}$ in.). This is a rapid wide-angle lens, but has been to a great extent replaced by Series IIIa, and is now only obtainable to order. English patent, 6028/90. German patent, 56109.

Anastigmat. Series IV.
 $f/12.5$.
Nat. Size 100 mm. ($4''$) focus.

45 Zeiss Anastigmatic Lens. Series V.

Carl Zeiss.



46 Ross-Zeiss Anastigmatic Lens. Series V.

Ross, Ltd.

Anastigmat. Series V.
 $f/18$.
Nat. Size 100 mm.
($4''$) focus.

Issued in 1890, in 15 focal lengths, from 40 mm. ($1\frac{1}{2}$ in.) to 1,660 mm. ($65\frac{1}{2}$ in.). This is a wide-angle lens, the smaller sizes embracing an angle of 110° . It is well suited for process work, etc. English patent, 6028/90. German patent, 56109.

47 Simple Tele-Photographic Lens.

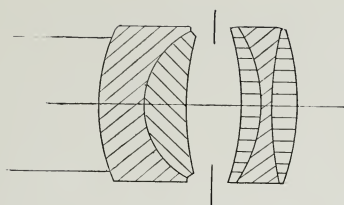
J. H. Dallmeyer, Ltd.

Provisionally protected (T. R. Dallmeyer) (16780) 1891. Consisting of a single cemented positive lens, and a cemented negative lens (both corrected for chemical rays), with variable separation, giving a wide range of equiva-



Simple Tele-Photographic Lens.

lent focal lengths, but short back foci. Discarded for the "Compound Tele-Photographic System." The original "Tele-Photographic" lens, and first published.

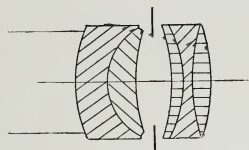


Anastigmat. $f/4.5$.
Nat. Size 100 mm. ($4''$) focus.

48 Zeiss Anastigmatic Lens. Series I. Carl Zeiss.

Issued in 1891, in 9 focal lengths, from 51 mm. (2 in.) to 416 mm. ($16\frac{3}{8}$ in.), adapted for instantaneous exposures, portraits, etc. Lenses of this series are now made to order only since they have been superseded by the Zeiss-Planar, Series Ia. English patent, 6028/90. German patent, 56109.

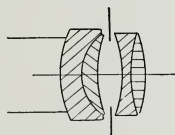
49 Zeiss Anastigmatic Lens. Series II. Carl Zeiss.



Anastigmat. Series II. $f/6.3$.
Nat. Size 100 mm. ($4''$) focus.

Issued in 1891, in 12 focal lengths, from 54 mm. ($2\frac{1}{8}$ in.) to 590 mm. ($23\frac{1}{4}$ in.). A very rapid anastigmatic doublet adapted for instantaneous photographs, portraits, etc. Suitably stopped down they are available for wide-range photography within an angle of 85° . English patent, 6028/90. German patent, 56109.

50 Zeiss Anastigmatic Lens. Series IIIa. Carl Zeiss.

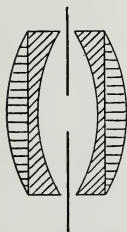


Anastigmat. Series IIIa. $f/9$.
Nat. Size 100 mm. ($4''$) focus.

51 Ross-Zeiss Anastigmatic Lens. Series IIIa. Ross, Ltd.

Issue in 1891, in 14 focal lengths, from 75 mm. (3 in.) to 820 mm. ($32\frac{1}{2}$ in.). Being comparatively simple in construction, and consequently cheap, this is a popular lens for instantaneous work, and for wide-angle photography up to 97° . The larger forms are suitable for process work. English patent, 6028/90. German patent, 56109.

52 Concentric Lens. Ross, Ltd.



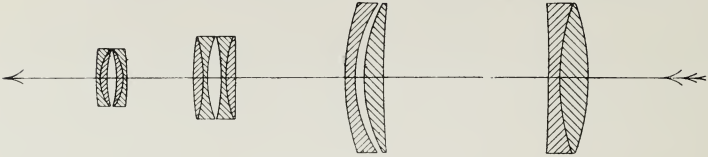
Concentric Lens.

Patented in 1888, but not issued commercially till 1892, owing to the difficulty of obtaining the exact quality of glass required. It is composed of two similar or symmetrical achromatic combinations, each being formed of two simple lenses, a plano-convex of glass of high refractive or but low dispersive power, cemented to a plano-concave of a low refractive index, but having the same or a higher dispersive power, these being cemented at their flat surfaces. The characteristic of this lens is its flatness of field when used with a stop of suitable aperture. English Patent 5194/88.

53 Compound Tele-Photographic Lens. J. H. Dallmeyer, Ltd.

Issued in 1892. Patent (T. R. Dallmeyer) No. 21933 (1892). In this system the positive element consists of a complete photographic lens and a

negative system that may be used with any such positive system of convenient focal length. The positive system should have an intensity of at



Compound Tele-Photographic Lens.

least $f/8$. The negative systems are made in twelve sizes, from 1 to 12 inches focus.

54 Ross-Goerz. Series III.

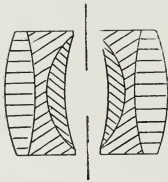
Ross, Ltd.

Introduced in 1892, in thirteen sizes: $3\frac{1}{2}$ inches to 35 inches. Angle included, 70° to 90° . Rapidity, $f/7.7$. A symmetrical doublet, each combination being triple. English patent, 23378/92. German patent, 74437.

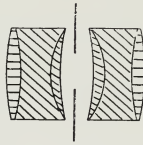
55 Ross-Goerz. Series IV.

Ross, Ltd.

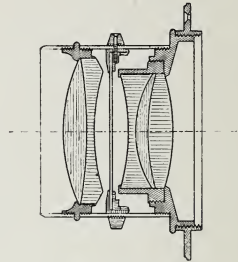
Introduced in 1892, in seven sizes: 12 inch focus to 47 inch focus. Angle included, 75° to 90° . Rapidity, $f/11$. English patent, 23378/92. German patent, 74437.



4. Ross-Goerz. Series III.



55. Ross-Goerz. Series IV.



56. Rapid Aplanat.

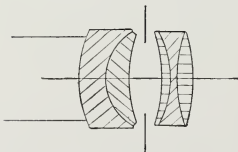
56 Rapid Aplanat.

C. A. Steinheil Sohne.

Series II, $f/6.5$. Unsymmetrical construction of 1893. Five lenses, the front lens double, positive, the back lens triple, negative. 24 cm. focus. Iris diaphragm.

57 Zeiss Anastigmatic Lens. Series IIa.

Carl Zeiss.



58 Ross-Zeiss Anastigmatic Lens. Ross, Ltd.
Series IIa.

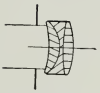
Issued in 1893, in 9 focal lengths, from 90 mm. ($3\frac{1}{2}$ in.) to 433 mm. (17 in.). A rapid anastigmatic doublet. English patent, 6028/90. German patent, 56109.

Anastigmat. Series IIa. $f/8$.

Nat. Size 100 mm. (4") focus.

59 Zeiss Anastigmatic Lens. Series VI.

Carl Zeiss.



Issued in 1893, in 9 focal lengths, from 200 mm. (8 in.) to 900 mm. ($35\frac{1}{2}$ in.) This was the first of the Zeiss Anastigmatic single lenses. They are composed of three glasses of the following description and order:—

Anastigmat.
Series VI. $f/14\frac{5}{8}$.

Nat. Size 100 mm.
(4") focus.

Old Crown.

1"510.

Flint.

1"564.

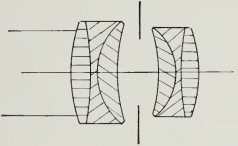
New Crown.

1"609.

This form of lens yields sharp, flat images, both as regards the central and the oblique pencils. They are, however, like all single lenses, not absolutely free from distortion. Being so well corrected in themselves, they can be combined with one another so that three or four fit in one mount, and thus give a series of single lenses and doublets furnishing a battery with various focal lengths.

60 Zeiss Anastigmatic Aplanatic Lens. Series VIa.

Carl Zeiss.



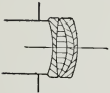
Anastigmat. Series VIa. $f/7\frac{7}{8}$.

Nat. Size 100 mm. (4") focus.

These are doublets made up of two similar or dissimilar lenses of Series VI. The nine lenses issued in Series VI. could be combined to yield 24 doublets of different foci, from 115 mm. ($4\frac{1}{2}$ in.) to 1519 mm. ($20\frac{1}{2}$ in.). Series VI. and VIa. are, to a great extent, superseded by Series VII. and VIIa.

61 Zeiss Anastigmat Lens. Series VII.

Carl Zeiss.



Anastigmat.
Series VII. $f/12\frac{5}{8}$.

Nat. Size 100 mm.
(4") focus.

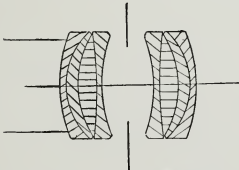
Issued in 1895, in 14 focal lengths, from 100 mm. (4 in.) to 1,000 mm. (39 in.); suited for landscapes, large portraits, etc. This series is an improvement on Series VI. It will be seen that the objective consists of four glasses cemented together. English patent 19509/94.

62 Zeiss Satz-Anastigmat Lens. Series VIIa.

Carl Zeiss.

63 Ross-Zeiss Satz-Anastigmat Lens. Series VIIa.

Ross, Ltd.



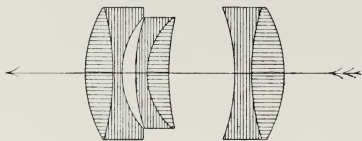
Satz-Anastigmat. Series VIIa. $f/6\frac{3}{8}$.

Nat. Size 100 mm. (4") focus.

This term is applied to combinations of two similar or dissimilar lenses of Series VII. They form doublets of 27 focal lengths, from 61 mm. ($2\frac{3}{8}$ in.) to 595 mm. ($23\frac{1}{2}$ in.). They can be used also singly, so that a doublet of this type, having the two single lenses of different focus, forms in all three lenses of different focus. English patent, 19509/94.

64 Stigmatic (Series I.) Portrait Lens.

J. H. Dallmeyer, Ltd.



Stigmatic (Series I.) Portrait Lens.

Issued in 1896. Patent (H. L. Aldis) No. 16640 (1895). Made in four focal lengths of 6 to 12 inches. Aperture $f/4$. Angle 60° , free from astigmatism and curvature of field.

65 Dallmeyer-Bergheim Lens (Portrait).

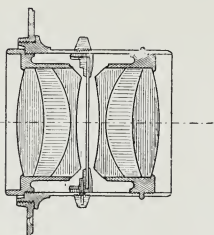
J. H. Dallmeyer, Ltd.

Issued in 1896 (T. R. Dallmeyer, for J. S. Bergheim). Issued in three sizes. The foci in each size adjustable; ranging from 20 to 55 inches equivalent, in the series. These are constructed on the tele-photographic principle, and give a larger image than ordinary portrait lenses of the same back focus. Designed for portraiture (large heads) only, giving extremely soft definition, by uncorrected spherical and chromatic aberration.

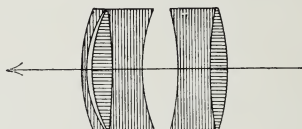
66 Orthostigmat.

C. A. Steinheil Sohne.

$f/6.8$. Symmetrical construction of 1896. (British patent, 12949.) Six lenses, three lenses in each half. 24 cm. focus. Iris diaphragm.



66. Orthostigmat.



67. Dallmeyer's "Stigmatic (Series II.) Universal Lens."

67 Dallmeyer's "Stigmatic (Series II.) Universal Lens."

J. H. Dallmeyer, Ltd.

Issued in 1897. Patent (H. L. Aldis) No. 16640. Issued in eleven sizes, focal lengths from $3\frac{1}{4}$ to 18 inches. Aperture $f/6$. Angle 85° , complete elimination of astigmatism and curvature of field. The single lenses may be used separately, the front combination having a focus one-half times that of the entire lens, while the back has a focus double that of the entire lens, thus giving a choice of three foci.

70 Petzval Portrait Lens.

Dr. A. Miethe.

Old form, introduced 1849. Chemical focus.

71 Petzval Portrait Lens.

Dr. A. Miethe.

Old form, introduced 1856. Chemical focus corrected.

72 Orthoscopic Lens (Petzval), $f/10$.

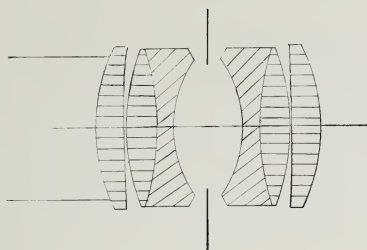
Dr. A. Miethe.

68 Zeiss Planar Lens. Series Ia.

Carl Zeiss.

69 Ross-Zeiss Planar Lens. Series Ia.

Ross, Ltd.



Planar. Series Ia. $f/4$.
Nat. Size 100 mm. (4") focus.

Issued in 1897 in 19 focal lengths, from 20 mm. ($\frac{3}{4}$ in.) to 840 mm. (33 in.). The characteristic of the Planar is its rapidity, coupled with the absence of spherical aberration, enabling the lenses of long foci to be used with large apertures, but good definition. In its smaller size it forms an intermediate objective between the microscopic and the photographic lens, and for photomicrography with a small amount of enlargement it is particularly well suited. English patent, 27635/96. German patent, 92313.

73 Old form of Globe Lens.

Dr. A. Miethe.

Aplanatic form, introduced 1862.

74 Single Lens.

Dr. A. Miethe.

Old form, introduced 1864.

75 Steinheil's Periscop.

Dr. A. Miethe.

Introduced 1865.

76 Steinheil's Periscop.

Dr. A. Miethe.

Symmetrical, introduced 1865.

77 Old Aplanatic Lens.

Dr. A. Miethe.

Rapid Rectilinear type, $f/7.7$, introduced 1870.

78 Anastigmat Aplanat.

Dr. A. Miethe.

Introduced 1889.

79 Anastigmat.

Dr. A. Miethe.

Introduced 1890. Spherical correction much better. Aplanatic; three lenses cemented in each combination.

80 Collinear Lens.

Dr. A. Miethe.

Old form, introduced 1894, $f/6.3$.

81 Collinear Lens.

Dr. A. Miethe.

New form introduced 1895, $f/7.7$.

82 Portrait Lens.

Dr. A. Miethe.

New form for Cinematographic work, introduced 1896, focus 45 cm.

83 Triple Anastigmat, $f/6.5$, of the Cooke Lens type.

Dr. A. Miethe.

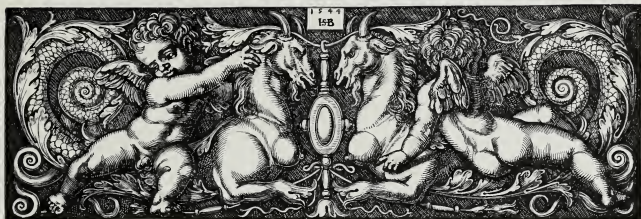
- 84 New Sector Shutter. Dr. A. Miethe.
The lens is opened from the centre to the edges in the same moment.
Introduced 1898.
- 85 Iris Diaphragms. W. Wray.
1 Shown at the Photographic Exhibition, 1888.
2 The next step towards reduction in outer diameter. Date 1891.
3 A modern Iris, the outer diameter being reduced as far as possible.
- 86 An exhibit illustrating the various stages of lens making. Carl Zeiss.
- 87 Portrait Lens, by Shepherd. Sands, Hunter & Co.
With fixed stops.
- 88 Dallmeyer Triplet Lens. Sands, Hunter & Co.
- 89 Andrew Ross Single Landscape Lens. Sands, Hunter & Co.
- 90 Grubb Single Lens. Sands, Hunter & Co.
- 91 Dallmeyer Stereographic Lens. Sands, Hunter & Co.

❁ ❁ Books. ❁ ❁

(The following are on tables in the Pictorial Section, North Nave.)

- 474 Portfolio: "Idylls of the Norfolk Broads," by Dr. P. H. Emerson. The Autotype Co.
- 475 Frame of separate illustrations from "Idylls of the Norfolk Broads," by Dr. P. H. Emerson. The Autotype Co.
(See Sampson Low, Marston & Co., page 155.)
- 476 Illustrated Works by Dr. Emerson. David Nutt.





Pictorial Photography.

LOAN COLLECTION.

Where a price is mentioned, the exhibit is for sale. The price is for the exhibit itself, or, when that is sold is for a duplicate, and includes the frame.

*An asterisk before the number, thus—*7—indicates that the catalogue contains a reproduction of the exhibit.*

J. H. ANDERSON.

- *1 Sunset over Waterloo Bridge.
- 2 Sunset, Blackfriars.
- 3 Sunset in the Pool.
- 4 Early Morning on the Thames.
- 5 Hoar Frost.
- 6 Morning Haze.
- 7 The Common, Winter.
- 8 Hampstead.
- 9 A Winter's Morning.



SUNSET OVER WATERLOO BRIDGE.—J. H. ANDERSON.

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- 15 A Wayside Mill. 17/6
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NORTH CHOIR AISLE, ELY.—H. W. BENNETT.

SHAPOOR N. BHEDWAR.

- 1 Weary Sits the Yogi-Raj.
- 2 Abigail: The Surprise.
- 3 All Intent the Palm He Reads.
- 4 The Mystic Sign.
- 5 The Soul's Awakening.
- 6 The World Renounced.
- *7 The Parting.
- 8 On the Temple Steps.

Tyag, or the Renunciation.
A series of eight pictures.

- 9 The Voice of Silence.
 - 10 Divine Reading.
 - 11 From Door to Door.
 - 12 At the Altar.
 - 13 The First Grief.
 - 14 "She, far from the joyous festival,
Sits in her own sequestered bower."
 - 15 In Trance.
 - 16 Gool-Culi. (A Rosebud.)
 - 17 Invocation.
 - 18 First Ablution.
 - 19 Initiation.
 - 20 Final Orders.
 - 21 Full Blown Priest.
 - 22 In Commune.
- } The Naver or Consecration of a Parsee Priest.

VALENTINE BLANCHARD.

Portraits of the members of the Whitefriars Club. Lent by the Club.
Taken direct upon wet collodion, 1871-2.

- 1 Jonas Levy.
- 2 William Black.
- 3 Crawford Wilson.
- 4 Harrison Weir.
- 5 Tom Hood.
- 6 Charles Gibbon.
- 7 Ashby Sterry.
- 8 Manville Fenn.
- 9 Dillon Croker.
- 10 Barry Sullivan.
- 11 Col. A. B. Richards.
- 12 William Sawyer.

FRED BOISSONNAS.

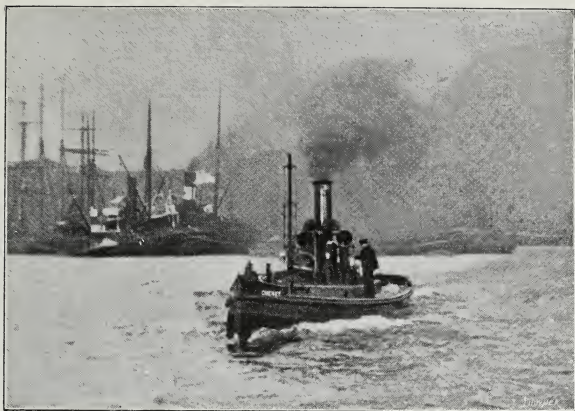
- 1 The Troglodytes, a prehistoric scene.
- 2 Mont Blanc, from 70 kilometres distance.
- *3 Child Pictures.
- *4 Nuit de Janvier.
- 5 L'attente.



CHILD PICTURE.—FRED. BOISSONNAS.

TOM BRIGHT.

- 1 Among the Birches.
- 2 The ever busy River.
- 3 Home to the Mid-Day Meal.
- 4 By the Mill Pond.
- 5 On Windermere.
- 6 After the Shower.
- 7 Returning from Pasture. (Photogravure by Walter L. Colls.)
- 8 Thames Study.
- 9 Thames Study.
- 10 Down by the Sea.
- 11 In Pastures Cool.
- 12 Lying Idle.



ON THE THAMES.—TOM BRIGHT.

T. M. BROWNRIGG.

1 Molde, Norway, at Sunset. (Sepia Platinum.)



A SURREY POND.—T. M. BROWNRIGG.

- *2 A Surrey Pond. (Sepia Platinum.)
- 3 Derwentwater, Lord's Island Bay, Evening. (Sepia Platinum.)
- 4 The Rue Jerzual, Dinan. (Sepia Platinum.)
- 5 An Autumn Evening on the River Wey. (Sepia Platinum.)
- 6 A Barge on the Shore, Pin Mill, Suffolk. (Sepia Platinum.)



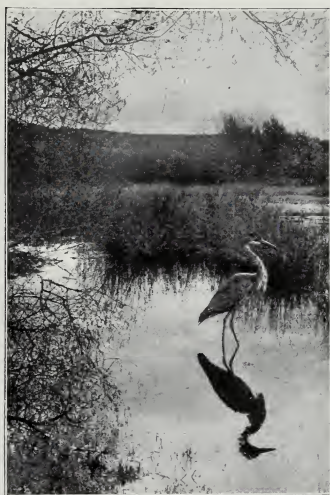
A KNIGHT.—ARTHUR BURCHETT.

ARTHUR BURCHETT.

- 1 La Belle Bretonne.
- *2 A Knight.
- 3 Girl with Violin.
- 4 Ceres.
- 5 Sunset.
- 6 Winter.

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- | | |
|------------------------|------------------|
| 1 Winter Sunset. | 4 Scotch Firs. |
| 2 The Old Lock. | 5 At the Tavern. |
| 3 Sunset on the Clyde. | 6 A Sussex Farm. |

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|----------------|---------------------|
| 1 Aha!! | 4 The Cartographer. |
| 2 A Pastorale. | 5 Fortune Telling. |
| 3 May Time. | 6 Sympathy. |



SPINNING WHEEL.—MRS. S. FRANCIS CLARKE.

*7 Spinning Wheel.

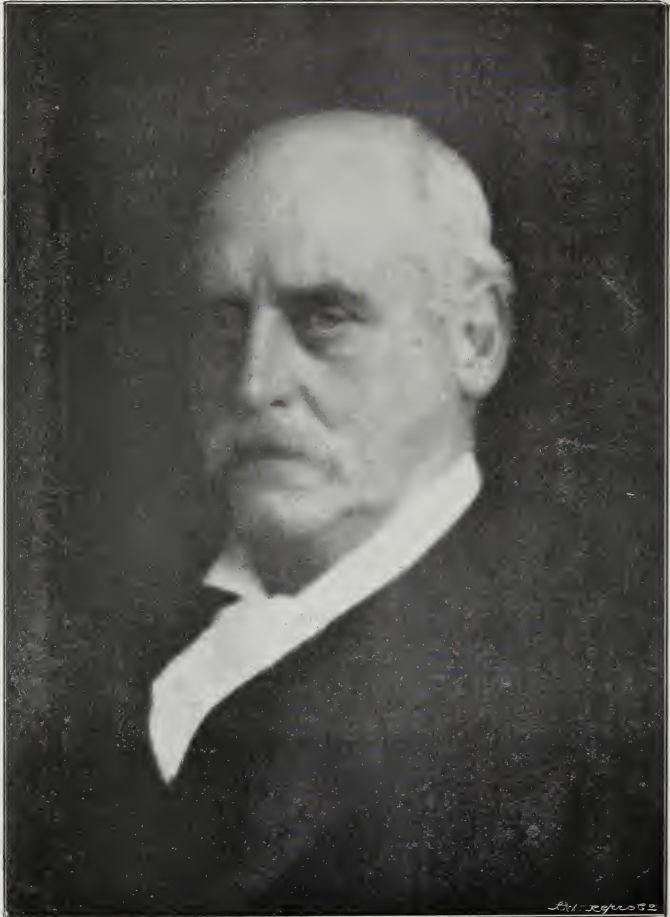
8 Love's Artifice.

9 Greek Study.

10 From Town to Town

11 Winter Gleaning.

12 After Mass.



GEORGE BATTEN.—REGINALD W. CRAIGIE.

LEWIS COHEN.

1-6 Algiers.

7 Moonlight Effect.

8 A Bivouac.

9 A Passing Shower.

10 Storm Clouds.

REGINALD W. CRAIGIE.

*1 George Batten. A Portrait.



MORIZ ROSENTHAL.—W. CROOK E

- 2 Edward Alexander. A Portrait.
- 3 A Suffolk Pastoral. 2 guineas
- 4 Sunshine.
- 5 Helen. A Study. 2 guineas
- 6 Eashing Bridge. 1½ guineas
- 7 After a Cousins' Mezzotint.

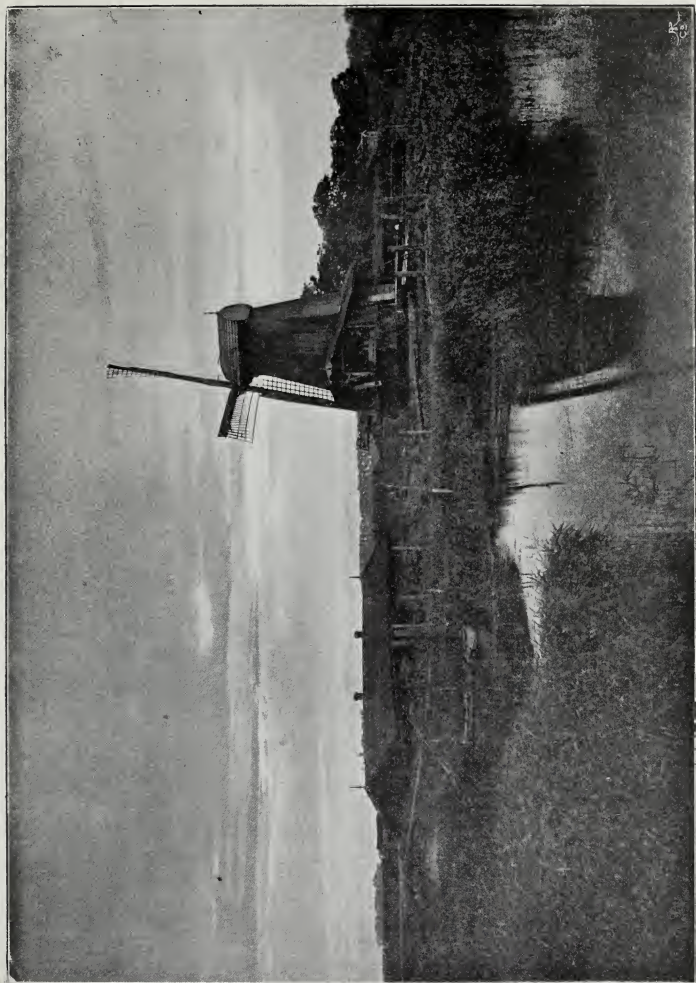
W. CROOKE.

- 1 J. L. Toole. (Carbon, taken direct.)
- 2 Ignas Jan Paderewski. (Carbon, taken direct.)
- 3 Arthur de Greef. (Carbon, taken direct.)
- ⁶4 Moriz Rosenthal. (Carbon, taken direct.)

GEORGE DAVISON.

- 1 An Onion Field.
- 2 Windworn.
- 3 The Saltings.
- 4 Cottage on La Chambotte.
- 5 Charing Cross Foot Bridge.
- 6 Reflections.
- 7 Portrait of J. D. Baldry, Esq.
- 8 Indoor Group.
- 9 Portrait of a Boy.
- 10 The River Waveney.
- 11 After a Shower, Brighton.
- 12 The Coast Road. West Mersea.
- 13 Fire in Oxford Street.
- 14 In Lowestoft Fishmarket.
- 15 The Sulphur Fountain. Aix-les-Bains.
- 16 Labourers and Teams.
- 17 The Salt River. Beeleigh.
- 18 Thistles.

EVENING
NEAR
DORDRECHT.



KARL
GREGER.

- | | | | |
|----|--------------------|----|---------------------------|
| 19 | Evening Mist. | 24 | Southend Esplanade. |
| 20 | At Fittleworth. | 25 | Leigh-on-Sea. |
| 21 | Farm on the Marsh. | 26 | Oxford Street, A Wet Day. |
| 22 | The Village Pond. | 27 | Cockspur Street. |
| 23 | Fishbourne. | 28 | The Hedger. |



STUDY OF STAGE LIGHTING.—ROBERT DEMACHY.

ROBERT DEMACHY.

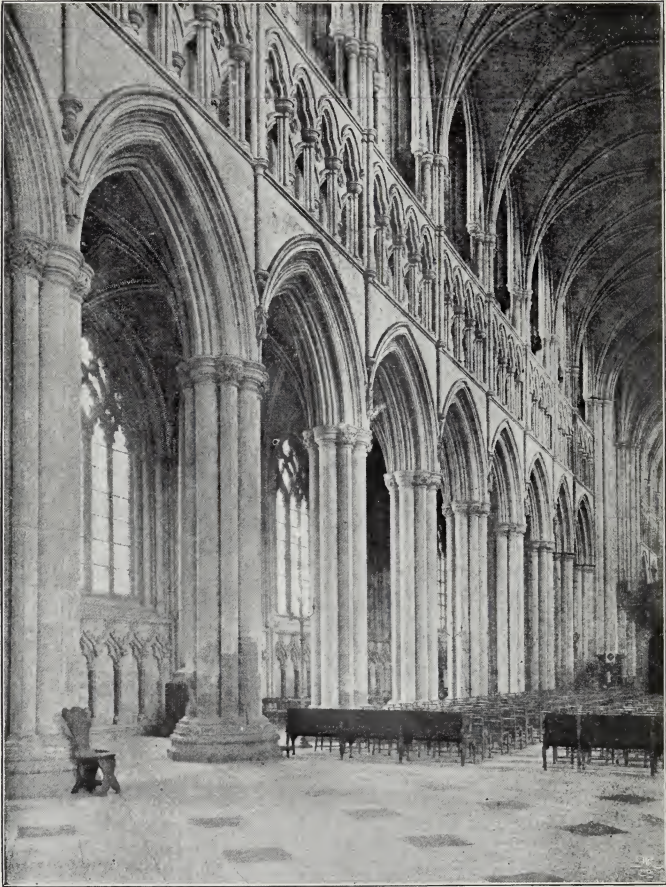
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2 guineas |
| 2 | Profile. 2 guineas | 10 | A Fan. 4 guineas |
| 3 | Youth. 2 guineas | 11 | The Student. 2 guineas |
| 4 | Primavera. | 12 | Zaandam. |
| 5 | Noon, Mentone. | 13 | A Face. 2 guineas |
| 6 | Children. 2 guineas | *14 | Study of Stage Lighting. |
| 7 | A Study of reflected light.
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| 8 | Portrait of Count de B. | 16 | Medallion. 3 guineas |

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- 18 Stormy Weather. 2 guineas
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- 20 In Toulon Harbour. 1 guinea
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- 22 From the Trocadero, Paris. 1 guinea
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- 24 Head of a Young Girl. 2 guineas
- 25 A Normandy Landscape. 2 guineas
- 26 Study of a Head. 3 guineas
- 27 Snow at the Bois de Boulogne. 3 guineas
- 28 A Study in Red. 2 guineas.
- 29 A Study. 2 guineas.
- 30 A Study. 2 guineas.

FREDERICK H. EVANS.

- 1 Lincoln Cathedral: from the Castle.
- 2 Lincoln Cathedral: West Front.
- *3 Lincoln Cathedral: Nave.
- 4 Beverley Minster: Nave.
- 5 Wells Cathedral: Stairs to Chapter House.
- 6 Kelmscott Manor: in the Attic.
- 7 Woodland Study: in the New Forest.
- 8 Woodland Study: in Redlands Woods.
- 9 Woodland Study: in Redlands Woods.
- 10 Sea and Sky and Sand.
- 11 Ingoldmells: Beach Study.
- 12 Ingoldmells: Beach Study.
- 13 Bow Fell from Esk House.
- 14 Borrowdale.

- | | |
|---------------------------------------|----------------------|
| 15 Great Gable. | 17 In Sty Head Pass. |
| 16 Derwentwater. | 18 Near Watendlath. |
| 19 Lincoln: Staircase in S.W. Turret. | |



LINCOLN CATHEDRAL, THE NAVE.—FREDERICK H. EVANS.

LIEUT. COLONEL J. GALE.

- | | |
|-----------------|--------------------------------|
| 1 Midday Lunch. | 2 A Corner of a Surrey Common. |
|-----------------|--------------------------------|

- | | | | |
|----|--|----|----------------------------------|
| 3 | The Village Spire among the
Trees. | 33 | A Pike Pool. |
| 4 | A Rivulet in Surrey. | 34 | In the Ferry Meadow. |
| 5 | After a Summer Shower. | 35 | Hay Carting. |
| 6 | A Rushy Mere. | 36 | A Berkshire Harvest Field. |
| 7 | Towards Sundown. | 37 | Sunshine and Shadow. |
| 8 | On a Sussex Common. | 38 | Away over the Downs. |
| 9 | Middy Rest. | 39 | The Smithy in Winter. |
| 10 | Primrose Corner. | 40 | The Meeting of the Ways. |
| 11 | At the Pond. | 41 | A Landmark on the Downs. |
| 12 | The Ouse at Lynn. | 42 | A Frozen Creek. |
| 13 | A Cornish Doorway. | 43 | A Frosty Morning. |
| 14 | The Lace Pillow. | 44 | A Drift-way in the Hills. |
| 15 | Strand-on-the-Green. | 45 | A Mill on the Ouse. |
| 16 | Strand-on-the-Green. | 46 | Interviewing the Ploughman. |
| 17 | The Ferry. | 47 | On Mitcham Common. |
| 18 | Homeward from Plough. | 48 | Lambs in the Clover. |
| 19 | Flatford Bridge. | 49 | Low Tide. |
| 20 | The Incoming Tide. | 50 | Scant Pastures. |
| 21 | The Dreamy Mill-dam. | 51 | Foldwards. |
| 22 | Afternoon Rest. | 52 | In the Wey Valley. |
| 23 | Twitch Burning. | 53 | At the Hard. |
| 24 | Village Spire. | 54 | Village News. |
| 25 | A Sussex Homestead. | 55 | The Shepherd and his Boy. |
| 26 | Old Custom House, Lynn. | 56 | On the Wey. |
| 27 | St. Ives Bridge. | 57 | The Village Well. |
| 28 | Hay Carting (Sussex). | 58 | Sleepy Hollow. |
| 29 | Hay Carting (Surrey). | 59 | Autumn, early Morning. |
| 30 | Osier Peelers getting Dinner
ready. | 60 | Potato Planting. |
| 31 | Through the Driftway. | 61 | Ploughing and Twitch
Burning. |
| 32 | The Abbot's Bridge. | 62 | On Guard. |

J. H. GEAR.

- 1 The Receding Tide. 3 guineas.
- *2 Silvery Morn. 3 guineas.
- 3 A Lowland Homestead.
- 4 'Twixt Day and Night. 2 guineas.
- 5 Grey December. 2 guineas.
- 6 The Pro-Choir, Winchester. 2 guineas.
- 7 The Confessor's Shrine, Westminster Abbey. 2 guineas.
- 8 When Evening Shadows fall.

ARTHUR J. GOLDING.

- 1 Twilight. $2\frac{1}{2}$ guineas
- *2 Going out to Sea. $1\frac{1}{2}$ guineas
- 3 Towards Evening on the Yare. $1\frac{1}{2}$ guineas
- 4 The Yare. (Early Morning.) $1\frac{1}{2}$ guineas



GOING OUT TO SEA.—ARTHUR J. GOLDING.

- 5 Evening Haze. $1\frac{1}{2}$ guineas
- 6 A Road Across the Dunes. $1\frac{1}{2}$ guineas
- 7 "Where Sea meets Land in Daily Strife." $1\frac{1}{2}$ guineas
- 8 "Where Shores and Meadows Meet." $1\frac{1}{2}$ guineas
- 9 "How Gently Fades the Waning Day." $1\frac{1}{2}$ guineas
- 10 The Waning of the Day. $1\frac{1}{2}$ guineas

- 11 The Old Lock. $1\frac{1}{2}$ guineas
- 12 On the Marshes. $1\frac{1}{2}$ guineas
- 13 A Grey Day. 1 guinea
- 14 Dawn. 1 guinea

W. T. GREATBATCH.

- 1 Where Reeds and Rushes Grow. $1\frac{1}{2}$ guineas
- 2 Departing Day. £1 5/-
- 3 Watergate Row, Chester. £1 5/-
- 4 Against the Tide. £1 5/-
- 5 The Harbour Head. $1\frac{1}{2}$ guineas
- 6 Marketing. £1 5/-



MOTHER'S POSY.—JOHN GUNSTON.

KARL GREGER.

- 1 Homeward. 2 guineas
- 2 Woodland Pond. 2 guineas
- 3 Suffolk Marshes. £1 1 6
- 4 Mountain Pastures in Snowdonia. £1 1 6

- 5 On the Dutch Coast. £1 1 6
- *6 Evening near Dordrecht. £1 1 6
- 7 Last Gleams of Light. £1 1 6
- 8 Playground of Wind and Waves. £1 1 6
- 9 Afterglow. £1 1 6

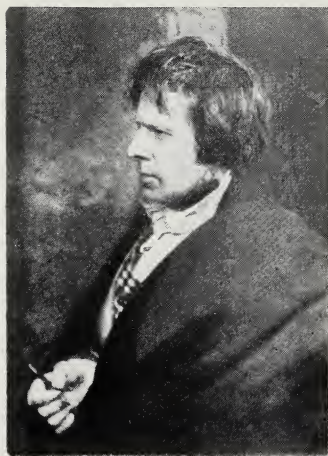
JOHN GUNSTON.

- 1 "'Tis Evening; all around is still,
Save for the music of the bubbling rill." £1 11 6
- *2 Mother's Posy. £1 11 6
- 3 Whitby. £1 11 6
- 4 An Autumn Afternoon. £1 11 6

E. CECIL HERTSLET.

- *1 A wayside shrine. (Carbon enlargement.)
- 2 Fishbourne. (Platinum.)
- 3 St. Mary Magdalene, Bruges. (Platinum. Uranium toned.)
- 4 Bickleigh. (Platinum. Uranium toned.)
- 5 The silent mere. (Platinum. Uranium toned.)

DAVID OCTAVIUS HILL, R.S.A.



DAVID OCTAVIUS HILL, F.S.A.

Born at Perth, 1802, and was trained as a painter and practised as such. He first had his attention directed to photography as an aid in painting a group of the ministers of the Free Church, which included some hundred portraits. He took up the calotype process, in which with the assistance of Dr. John Adamson, a Chemist, he became an expert, and produced many portraits which can be seen in the Albums in The Historical Section, as well as in this collection. His original negatives are in existence, and their publication may still be possible.

(Lent by J. Craig Annan, Esq.)

- 1 Robert Hunt.
- 2 The Honourable Mr. &
Mrs. Stuart Wortley.
- 3 David Robert, R.A.

- 4 Sir Francis Grant, P.R.A.
- 5 J. Henning, and Handyside Ritchie.
- 6 Lord Robertson, Senator of the College of Justice, Scotland.
- 7 Wm. Etty, R.A.
- 8 G. W. Kemp, Architect of the Scott Monument.
- 9 John Blackie, Junior, Publisher, Lord Provost of Glasgow.
- 10 Professor Wilson, The "Christopher North " of Blackwood's Magazine.
- 11 Sir William Allan, P.R.S.A.
- 12 Sir John Macneil.
- 13 John Gibson, R.A.
- 14 John Gibson Lockhart, Son-in-law and Biographer of Sir Walter Scott.
- *15 Mrs. Jameson, Authoress of "Memoirs of the early Italian Painters," &c., &c.

(Lent by Messrs. T. & R. Annan).

- 16 Lady Ruthven, T. Duncan, A.R.A., D. O. Hill & W. B. Johnstone, Sheriff Napier, The Adamson Family, Rev. W. Robertson, D.D.

(Lent by Andrew Elliot, Esq., Edinburgh).

- | | |
|------------------------------------|----------------------------------|
| 17 D. O. Hill. | 26 Sir John Gladstone of Fasque. |
| 18 John Murray (Publisher). | 27 Stuart Wortley. |
| 19 Sir John Gladstone, Bart. | 28 Henning and Ritchie. |
| 20 Sir John Macneil. | 29 Dr. Bunting. |
| 21 The Rev. W. R. Tweedie,
D.D. | 30 Sam Aiken. |
| | 31 Mrs. Rigby. |
| 22 The Bishop of Ripon. | 32 Mrs. Smith. |
| 23 Sir Culling Eardley. | 33 Master Miller. |
| 24 Professor Munro. | 34 Rev. J. J. Wood, D.D. |
| 25 Scott of Peel. | 35 Dr. Sampson, York. |



MRS. JAMESON.

D. O. HILL.

- 36 Mr. Rintoul, Editor of Spectator.
 37 Mr. Macneil.
 38 Hayden.
 39 Dumbarton Presbytery, May 29th, 1845.
 40 Dr. George Bell, Miss Bell, and Rev. J. Bell.
 41 Mr. & Mrs. Stuart Wortley.
 42 Mrs. Watson.
 43 Thos. Duncan, R.S.A.
 44 Merchiston Castle.
 45 W. B. Johnstone, David Scott, and W. L. Laitch.
 46 Newhaven Fishwomen.
-

(Lent by W. Crooke, Esq.)

- 47 Eight portraits in frame.
 48 Eight portraits in frame.
-

A. HORSLEY HINTON.

- | | |
|--------------------------------|----------------------------------|
| *1 Melton Meadows. 3 guineas. | 11 Sweet Wilderness. 2 guineas |
| (Frame not included). | 12 Flowery wastes. 2½ guineas |
| 2 Deserted Shore. 5 guineas | 13 Tide Bereft. 2½ guineas |
| 3 Grey Shallows. 2½ guineas | 14 Reedy Ways. |
| 4 Night's Fleeting. 2½ guineas | 15 Reed harvesting. |
| 5 The Ferry. 2½ guineas | 16 Salt Marshes, Essex. |
| 6 Drifting shadows. | 17 Requiem. 2 guineas |
| 7 Rain from the Sea. | 18 Westwards. |
| 8 Feldee Shore. 2½ guineas | 19 Sea mists. |
| 9 Day's decline. 2 guineas | 20 Fenland. |
| 10 Day's awakening. 2 guineas | 21 Sunshine and Rain. 2½ guineas |



MRS. JULIA MARGARET CAMERON.

Nowadays the advocates of what is styled "diffusion of focus" may be numbered by thousands, but in the seventies, they were but few and far between. The calotype workers were to some extent compelled to give their pictures breadth and vigour by the very nature of the process, but the advent of the collodion film with its delicacy and almost microscopic structure gave an impetus in the other direction to photography, the reaction from which is largely due to two artists, Mrs. Cameron and O. G. Rejlander. Her work consisted mostly of large portraits; she possessed a distinct style, and numbered among her sitters such men as Tennyson, Herschel and others, who were as picturesque as they were famous. Unfortunately her technical skill was not equal to her artistic ability, and many otherwise fine productions were marred by defects in photographic manipulation. She seems to have exercised by her many varied accomplishments no small influence upon those who came within the artistic circle in which she moved. She died in Ceylon, January 26th, 1879.

- 22 Woodbridge Quay.
 - 23 Marshland near London.
2 guineas
 - 24 Birchwood. 2 guineas
 - 25 A Reedy corner. 2 guineas
 - 26 Winter's Daybreak.
 - 27 A Panel. 3 guineas
 - 28 Evening. 4 guineas
 - 29 Windless grey. 1 guinea
 - 30 Estuary.
 - 31 Pastures by the Sea.
 - 32 In April.
 - 33 October.
 - 34 Benfleet Ford. 2 guineas
 - 35 After Rain.
 - 36 Deben River. 1 guinea
 - 37 Light and Shadow. 1 guinea
 - 38
 - 39
 - 40
 - 41 Portrait.
 - 42 Portrait.
 - 43
 - 44
 - 45
- JOHN A. HODGES.
- 1 Sea, Sand, and Sky. £1 10
 - *2 Approaching Storm, Loch
Leven. £1 10
 - 3 Narcissi. 15/-
 - 4 Marguerites. 15/-
 - 5 Evening on Loch Lomond. '£2

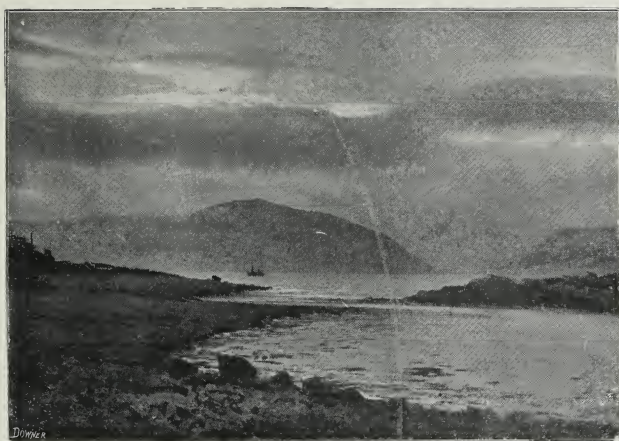


Photo. by J. H. AVERY.

Lowland Pastures.

*Collotype by
BEMROSE & SONS, Limited,
Derby and London.*

- 6 Softly falls the Evening Light. 15/-
- 7 Winter. £1 5
- 8 The Day was nearly Done. £1 5
- 9 At Furness Abbey. £1 10
- 10 Evening on Windermere. £1 10
- 11 Penmaenmawr. £2 10
- 12 Drear December. £2
- 13 At Walberswick. £1 10



AN APPROACHING STORM, LOCH LEVEN.—JOHN A. HODGES.

- 14 The Haunt of the Moorhen. £1 10
- 15 Twilight. £1
- 16 A Stormy Sunset. £1
- 17 Dunster Mill. 15/-
- 18 A Misty Morning on the Conway. £1 10
- 19 Moel Siabod, from the Llugwy. £1
- 20 Lyn Idwal, and the Devil's Kitchen. £1 10
- 21 On Loch Katrine. £1 10



MELTON
MEADOWS.

A. HORSLEY
HINTON.

F. HOLLYER.

- 1 Waterloo Bridge. (Platinotype taken in 1874.) 15/-
- 2 The Squire's Team. (Taken on Wet Plate, instantaneously, 1871.) 15/-
- 3 "Homer." (From a Bas-relief by Harry Bates, A.R.A.) 4 guineas
- 4 Sir Galahad. (From a Painting by G. F. Watts, R.A.) 4½ guineas
- 5 The Merciful Knight. (From a Painting by Sir E. Burne Jones.) 2½ guineas
- 6 Study. (From a Pencil Drawing by Sir E. Burne Jones.) 2½ guineas
- 7 John Ruskin, 1896. 1 guinea
- 8 "Portrait en Chapeau."

GEORGE H. JAMES.

- 1 Sunrise on Beaulieu Common. (Carbon.) 1 guinea
- 2 The Forester's Home. (Carbon.) 1 guinea
- 3 Scotland's Flower. (Gum-Bichromate.) 1 guinea
- 4 Peace. (Gum-Bichromate.) 1 guinea⁵
- 5 The Ebb of the Tide. (Gum-Bichromate.) 1 guinea
- 6 A Storm off Llangranog. (Carbon.) 5 guineas
- 7 Evening on the Solent. (Gum-Bichromate.) 1 guinea
- 8 A Summer Night, off Cowes. (Platinum.) 1 guinea
- 9 Between the Lights. (Gum-Bichromate.) 1 guinea
- *10 A Portrait (Gum-Bichromate.) 1 guinea

CHARLES JOB.

- 1 Snow and Sunshine. (Carbon.) 1 guinea
- 2 A Snow Covered Track. (Carbon.) 1 guinea
- 3 After Rain. (Carbon.) 1 guinea
- 4 An Old Hulk. (Carbon.) 1 guinea
- *5 Low Water. (Platinum.) 1 guinea
- 6 Abandoned. (Platinum.) 1 guinea



A PORTRAIT.

GEORGE H. JAMES.

- 7 By the Waterside. (Platinum.) 1 guinea
 8 When the Tide is Out. (Platinum.) 1 guinea
 9 On a Sussex Common. (Platinum.) 1 guinea
 10 The Church on the Marsh. (Platinum.) 1 guinea



LOW WATER.—CHARLES JOB.

C. BARROW KEENE.

- 1 By Wood and Stream. 1 guinea
 2 A Derbyshire Dale. 1 guinea
 3 South Aisle of Choir, Lichfield. 1 guinea

ALEXANDER KEIGHLEY

- 1 "Gather the Roses while ye may,
 Old Time is still a-flying." £1 10
 *2 The Signal Box. 15/-
 3 Twilight Grey. 15/-
 4 Flowers of the Field. £1
 5 The Haunt of the Seagull. £1 10

- 6 Driftwood. £1
- 7 Flowers of the Salt Marsh.
- 8 A Reedy Waterway.
- 9 A Creek near the Sea.
- 10 Early Spring. 10/-



THE SIGNAL BOX.—ALEXANDER KEIGHLEY.

THE REV. F. C. LAMBERT.

- *1 Wind and Rain. $2\frac{1}{2}$ guineas
- 2 Showery Weather. $2\frac{1}{2}$ guineas
- 3 Sea Fog. Folkestone Harbour. £1 5
- 4 Evening Mist, After Rain. 2 guineas

GEORGE LAMLEY.

- | | |
|---------------------|-------------------------|
| 1 The Golden River. | 6 Peace. |
| 2 Low Tide. | 7 A Mill on the Tees. |
| 3 Dublin Bay. | 8 Showery Weather. |
| 4 The Dead City. | 9 The Never-Ending Fen. |
| 5 After the Storm. | 10 Salt Marshes. |



WIND AND RAIN.—REV. F. C. LAMBERT.

- | | | | |
|----|----------------------|----|----------------------|
| 11 | Blowing up for Rain. | 14 | A Stagnant Mere. |
| 12 | A Sluggish River. | 15 | Sunshine and Shower. |
| 13 | Solitude. | | |

PAUL LANGE.

- | | | |
|---|--|-----------|
| 1 | On Road to Hecla, Iceland. (Gelatino-chloride.) | 3 guineas |
| 2 | Venice. (Gelatino-chloride.) | 3 guineas |
| 3 | Cooling Moments, on Windermere. (Gelatino-chloride.) | 3 guineas |

PERCY S. LANKESTER.

- | | | |
|----|--------------------------|------------|
| *1 | A Pretty Lane. | 2½ guineas |
| 2 | The Afterglow. | 1½ guineas |
| 3 | Sunset on Ice and Water. | 1½ guineas |
| 4 | The Furnace Pond. | 1½ guineas |
| 5 | A Country Scene. | 1½ guineas |
| 6 | A Bye Road. | 25/- |
| 7 | Reflections. | 1½ guineas |



A PRETTY LANE.—PERCY S. LANKESTER.

- 8 "Green Grow the Rushes O." 1½ guineas
- 9 The Moat at Hever Castle. 1½ guineas
- 10 In the Woods. 1½ guineas
- 11 Marshland. 1½ guineas

EDGAR G. LEE.

- 1 The Evening of Life. (Carbon.) 1 guinea
- 2 Castle Garth, Newcastle-on-Tyne. (Carbon.) 1 guinea
- *3 At the Smithy. (Carbon.) 1 guinea
- 4 Moorland Solitude. (Carbon.) 1 guinea

BERNARD LINTOTT.

- 1 On the Top of the Tide. 2 guineas
- 2 Catbell from the Derwent. 2 guineas
- 3 On the Derwent. 2 guineas
- 4 Clouds. 2 guineas
- 5 Blowing up for Rain. 2 guineas
- 6 Littlehampton Harbour. 2 guineas



AT THE SMITHY.—EDGAR G. LEE.

THOMAS MANLY.

- | | |
|--------------------|-------------------|
| 1 Sunbeam. £1 10/- | 3 Aurora. £1 10/- |
| 2 Tess. £1 10/- | |

PAUL MARTIN.

- | |
|--|
| 1 A Wet Night on the Embankment. (Carbon.) £1 |
| 2 Big Ben at Night. (Carbon.) £1 |
| 3 Houses of Parliament at Night. (Carbon.) £1 |
| 4 Corner of Trafalgar Square. (Carbon.) £1 |
| 5 A Winter's Night on the Embankment. (Carbon.) £1 |
| 6 A Frosty Moonlight Night. (Carbon.) £1 |

ALFRED MASKELL.

- | |
|----------------|
| 1 Hollandaise. |
| 2 — |

CHARLES MOSS.

- | | | | |
|---|--------------------|----|----------------------|
| 1 | Sunshine and Rain. | 7 | Blowing up for Rain. |
| 2 | Hayfields. | 8 | Cornfields. |
| 3 | A Suffolk Staithe. | 9 | The Homestead. |
| 4 | Water Meadows. | 10 | Early Morning. |
| 5 | Bosham Shore. | 11 | Windblown Trees. |
| 6 | Homeward Bound. | | |

J. C. S. MUMMERY.

- | | | |
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| 1 | Misty October. | 2½ guineas |
| 2 | By Furrow and Hedgerow. | 2½ guineas |
| 3 | "When day declining sheds a milder gleam." | 2½ guineas |
| 4 | "The sky o'ercast,
The joyless winter day." | 2½ guineas |
| 5 | The Marsh Road. | 2½ guineas |
| 6 | "A hamlet
Where yet some pleasing vestiges remain
Of unpurverted Nature's golden reign." | 2½ guineas |
| 7 | "The wide shore
Slopes out to meet the fast incoming tide." | 5 guineas |
| 8 | "Slow from the sky the light of day declines," | 2 guineas |
| 9 | "Unveiled her peerless light,
And o'er the dark her silver mantle threw." | 2½ guineas |
| 10 | "Washing of the lonely seas,
Piping of the salted breeze." | 2½ guineas |
| 11 | The Wayfarer. | 1 guinea |
| 12 | High Noon. | 2 guineas |

CONSTANT PUYO.

- | | | |
|---|---------------------------------|-------|
| 1 | Portrait. (Gum-Bichromate.) | £2 10 |
| 2 | Croquis. (Gum-Bichromate.) | £2 10 |
| 3 | Tete d'Etude. (Gum-Bichromate.) | £2 10 |
| 4 | Clair-Obscur. (Gum-Bichromate.) | £2 10 |



A NIGHT OUT.
HOMELESS.

O. G. REJLANDER.

- 5 Profil. (Carbon.) £4
- 6 Un billet. (Carbon.) £1 12
- *7 Grave affaire. (Carbon.) £1 12
- 8 Motif rond. (Carbon.) £1 4
- 9 Deuil. (Carbon.) £1 12
- 10 Gaité. (Carbon.) £2
- 11 Femme au gant. (Gelatino-Chloride.) £1 4
- 12 Vengeance. (Carbon.) £2 10
- 13 Nocturne. (Gelatino-Chloride.) £1 4
- 14 "Bonsoir." (Gelatino-Chloride.) £1 4
- 15 Sous la lampe. (Carbon.) £2 10
- 16 Tête. (Carbon.) £1 4
- 17 Maternité. (Carbon.) £1 4
- 18 Etude, 1830. (Carbon.) £1 12
- 17 Etudes pour un geste. (Carbon.) £3

MISS JANET REID.

- 1 Devotion. 1½ guineas
- 2 Learning her "Pater Noster." 1½ guineas
- 3 The Noonday Meal. 1½ guineas
- 4 Outward Bound. £1 5
- 5 Low Tide. £1 5
- 6 "The Fading smile of closing day." 1½ guineas
- 7 "Where the earth and ocean meet." 2 guineas
- 8 "As sinks the sun's declining ray." 12/6
- 9 "A frown is on the heavens' brow." 2 guineas
- 10 The Mouth of the River. £1 5
- 11 The Grey Dawn of Morning. £1 5
- 12 The Old Grindstone. 15/-
- 13 Helping Mother. 15/-

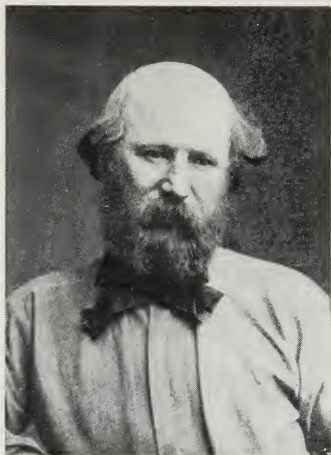
- 14 The First Knitting Lesson. 15/-
- 15 The Little Shoeblick. $1\frac{1}{2}$ guineas
- 16 Feeding Her Pets. $1\frac{1}{2}$ guineas
- 17 "Flowing onward to the sea." 2 guineas
- 18 Sunshine and Shower. £1 5
- *19 Watching the Boats. $1\frac{1}{2}$ guineas



RUE JERZUAL, DINAN.—T. M. BROWNIGG.

O. G. REJLANDER.

Born 1813. Died January 18th, 1875.



O. G. REJLANDER.

Rejlander was the son of an officer in the Swedish Army, and received in Sweden, Spain and Rome the training of a painter. On coming to England he commenced as a portrait painter and lithographic artist in Wolverhampton, but his attention was soon turned towards photography, which subject rapidly absorbed it entirely. He left Wolverhampton for London in 1860, and the last years of his life were spent in the Metropolis, working as a professional photographer, but devoting himself almost without reserve to picture making by photography. The Prints, except 22 and 23, are by Mr. H. T. Malby, from the original negatives in the Society's possession.

Nos. 1 to 2 inclusive, 1 guinea each.

- | | | | |
|----|---|-----|---|
| 3 | Gustave Doré. | 14 | Play. |
| 4 | Where's that Cat. | 15 | The Juggler. |
| *5 | A night out—Homeless. | 16 | "Please give us a copper." |
| 6 | This is the way my young master goes out! | 17 | Lazy Jack. |
| 7 | Waiting for the kind lady. | 18 | Have a tune, Miss? |
| *8 | Winter. | *19 | Infant Samuel. |
| 9 | The two Ways of Life. | 20 | A sleeping child. |
| 10 | Mr. Colman as "Belphegor." | 21 | Rejlander as "Garibaldi." |
| 11 | At the Cross. | 22 | Ginx's Baby. (Lent by the South London Photo. Society.) |
| 12 | Meditation. | 23 | Happy Days. (Lent by the South London Photo. Society.) |
| 13 | Pleading. | | |

H. P. ROBINSON.

- | | | |
|---|-------------------------|-----------|
| 1 | He never Told his Love. | 2 guineas |
| 2 | Wayside Gossip. | 2 guineas |

- 3 Geese and Goslings. 3 guineas
- 4 Off Arran. 3 guineas
- 5 Over the Hedge. 2 guineas
- 6 The Music of the Birds.
2 guineas
- 7 Coming Boats. 3 guineas
- *8 Storm Clearing Off. 3 guineas
- *9 Dawn and Sunset. 5 guineas
- 10 "At Sunset Leaps the Lusty
Trout." 3 guineas
- 11 Wild Weather. 3 guineas
- 12 In Welsh and English. 2 guineas
- 13 The Mill Door. 2 guineas
- 14 In Kílbrennan Sound. 2 guineas
- 15 In Holy Loch. 2 guineas
- 16 A Chat with the Miller. 2 guineas
- 17 Primrose Time. 2 guineas



WINTER.—O. G. REJLANDER.

RALPH W. ROBINSON.

- 1 'Twixt Land and Sea. 3 guineas
- 2 Ebb Tide. 3 guineas
- 3 Three Fishers. 3 guineas
- 4 "Why not be Friends?" $1\frac{1}{2}$ guineas
- 5 "Midst the ceaseless piping of the wind." 3 guineas
- 6 Whitstable. $2\frac{1}{2}$ guineas
- 7 Sweet Springtime. $1\frac{1}{2}$ guineas
- 8 Summer Among the Flowers. $1\frac{1}{2}$ guineas
- 9 Left by the ebbing wave. 3 guineas
- 10 Foggy Thames. $2\frac{1}{2}$ guineas.
- 11 Feeding the Ducks. $1\frac{1}{2}$ guineas



STORM CLEARING OFF.

H. P. ROBINSON.

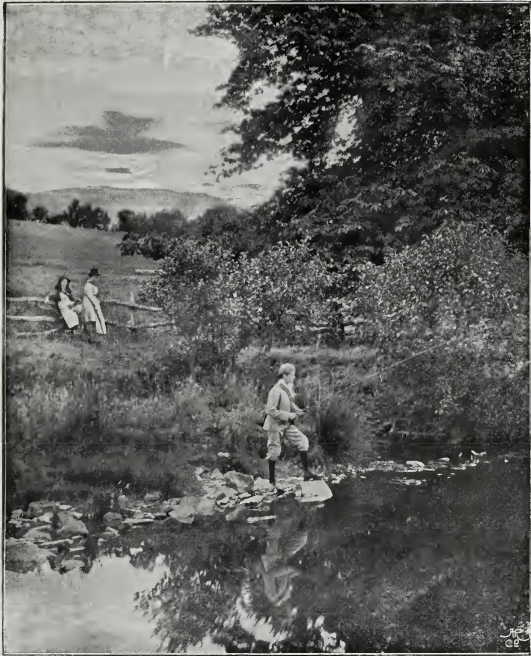


“SILVERY MORN.”

Photo by J. H. Gear.

The Acme Tone Engraving Co. Ltd.,
Watford, Herts.

- 12 A Sudden Squall. $1\frac{1}{2}$ guineas
 13 "On the hither side of night." $1\frac{1}{2}$ guineas
 14 Old Cronies. $1\frac{1}{2}$ guineas
 15 Becalmed. 2 guineas
 16 Making Friends. $1\frac{1}{2}$ guineas



AT SUNSET LEAPS THE LUSTY TROUT.—H. P. ROBINSON.

- 17 The Cooling Stream. $1\frac{1}{2}$ guineas
 18 "All illumined in a rustic glory." $1\frac{1}{2}$ guineas
 19 Dying Day. $1\frac{1}{2}$ guineas
 20 Going to Pasture. $1\frac{1}{2}$ guineas
 21 "Don't you wake!" $1\frac{1}{2}$ guineas
 22 A New Pet. $1\frac{1}{2}$ guineas

- 23 A Village by the Sea. $1\frac{1}{2}$ guineas
- 24 "Loves me ! Loves me not !" $1\frac{1}{2}$ guineas
- 25 "A primrose by the river's brim." $1\frac{1}{2}$ guineas
- 26 Suspicious. $1\frac{1}{2}$ guineas
- 27 A Child's Portrait.
- 28 A Lady's Portrait.
- 29 A Child's Portrait.
- 30 Playmates.
- 31 A Child's Portrait.
- 32 A Child's Portrait.
- 33 G. F. Watts, Esq., R.A. $1\frac{1}{2}$ guineas
- 34 The Late Sir John Everett Millais, P.R.A. 2 guineas
- 35 The Late Lord Leighton, P.R.A. 2 guineas

PHILIPP RITTER VON SCHOELLER.

- 1 Landscape in Winter. (Gum bichromate process, enlargement.)
- 2 Sunset. (Gum bichromate process, enlargement.)
- 3 Mina. (Platinotype enlargement.)
- 4 A Study. (Platinotype enlargement.)

HARRY SELBY.

- 1 Dublin Bay. (Bromide.) 3 Isleworth. (Bromide.)
- 2 A Wet Harvest. (Bromide.) 4 After the Rain. (Bromide.)

LESLIE SELBY.

- 1 Evening Calm. 4 A River Scene.
- 2 Season of Mists. 5 Sundown.
- 3 Barnes Common. 6 The Sun is Sinking Fast.

The DUCHESS OF SERMONETA.

- 1 Santo Spirito, Florence. Evening.
- 2 A Wild Garden.



THE INFANT SAMUEL.—O. G. REJLANDER.

- 3 A Meeting of the Highway Board.
- 4 The Shades of Eve. Mote Park, Maidstone.

JAMES A. SINCLAIR.

- 1 A Dutch Peasant. 2 guineas
- 2 Dalmatian Fruit Seller. 1½ guineas
- 3 Twilight. 2 guineas
- 4 Lake Lugano. 2 guineas
- 5 Sunshine and Shadow. 2 guineas

- 6 Dinner a la Carte. 1½ guineas
- 7 The Village Pump. 2 guineas
- 8 An Ishmaelite. 1½ guineas
- 9 By the side of the Lake. 1½ guineas
- 10 Sunset on Lake Iseo. 2 guineas
- 11 A Decadent. 1½ guineas
- 12 Sea Sky and Sand. 1½ guineas
- 13 Lucerne. (Artigue Paper.) 1½ guineas
- 14 Guy's Cliffe Mill. Warwick. 2 guineas
- * 15 Trau Gate. 1½ guineas
- * 16 Beasts of Burden. 1½ guineas
- 17 "Where brooding darkness spreads his jealous wings." 3 guineas
- 18 Bridge of Sighs. 2 guineas
- 19 At Trebinji. 2 guineas

HENRY STEVENS.

- | | |
|--------------------------|--------------------|
| 1 The Weybridge Beagles. | 3 On Guard. |
| 2 Flower Studies. | 4 A Trained Nurse. |



NUIT DE JANVIER.

F. BOISSONNAS.

- | | |
|--------------------------|------------------|
| 5 Tired Out. | 9 Worn Out. |
| 6 A Coquette. | 10 A Cavalier. |
| 7 Dutch Rabbits. | 11 Meadow Sweet. |
| 8 A Distinguished Guest. | 12 Liliu Harris. |

MISS STODDART.

- | | |
|-----------------------|------------------------------|
| 1 In Thoughtful Mood. | 4 On Household Cares Intent. |
| 2 Convalescent. | 5 An Amusing Letter. |
| 3 Dropped Stitches. | |

F. M. SUTCLIFFE.

- *1 Sunshine. 1 guinea
- 2 Water Rats. 1 guinea
- 3 Stern Reality. 2 guineas
- 4 The Ingathering. £1 11 6
- 5 A Bonny Fisher Lass. 1 guinea
- 6 Contentment. 1 guinea
- 7 A Flither Picker. 1 guinea
- 8 Moor Sheep. £1 11 6
- 9 Whitby East. 1 guinea
- 10 Home. 1 guinea
- 11 Sunshine and Shower. 1 guinea
- 12 The Flag of Distress. 1 guinea
- 13 The Beggars' Bridge. 1 guinea
- 14 A Salmon Pool. 1 guinea
- 15 The Rake's Progress. 1 guinea
- 16 No Road. 1 guinea
- 17 Natives of these Isles. 1 guinea
- 18 A Decayed Seaport. 1 guinea
- 19 Fog. 1 guinea

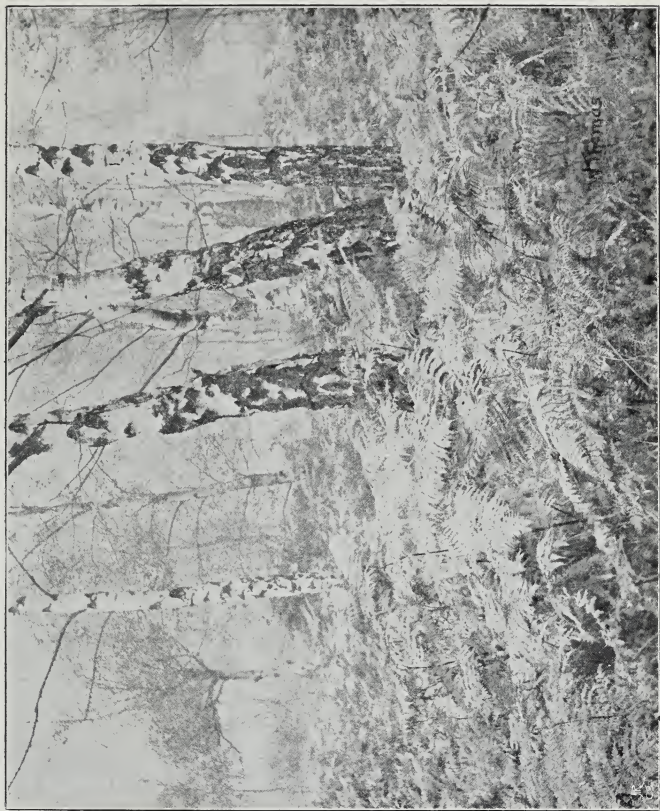
- 20 A Fisher Boy. 1 guinea
- 21 Westward Ho. 1 guinea
- 22 Morning. 1 guinea
- 23 Scotchmen. 1 guinea
- 24 A Fish Stall. 1 guinea
- 25 Whitby Piers in Winter. 1 guinea
- 26 A Passing Cloud. 1 guinea



SUNSHINE.—F. M. SUTCLIFFE.

- 27 Peace. 1 guinea
- 28 The Fisherman's Return. 1 guinea
- 29 The North Wind. 1 guinea
- 30 Hurricane Corner. 1 guinea
- 31 A Sea Fog. 1 guinea
- 32 Wives and Widows. 1 guinea
- 33 A Wooden Ship Builder. 1 guinea
- 34 Up the Harbour. £1 11 6
- 35 On the Riggs. 1 guinea

BIRCH
AND
BRACKEN.



W.
THOMAS.

- 36 Retired from Sea. 1 guinea
- 37 Men. 1 guinea
- 38 A Pastoral. 1 guinea
- 39 Dunsley Bay. 1 guinea
- 40 Bathers. 2 guineas
- 41 The Quay. 1 guinea
- 42 Limpets. 1 guinea
- 43 A Sandwich 10/6
- 44 Where the Apples go to. 10/6
- 45 Setters 1 guinea
- 46 "Where Tempests never Beat, nor Billows Roar." 10/6
- 47 "The Day is done." 10/6
- 48 Fisher Belle. 10/6
- 49 A Winter's Morning. 10/6
- 50 Among the Turnips. £1 11 6
- 51 Hearts of Oak. 10/6
- 52 A Wave. 10/6
- 53 Kindling. 1 guinea
- 54 Tempus fugit. 10/6
- 55 A Golden Time. 10/6
- 56 Butterburr. 1 guinea
- 57 A Portrait.
- 58 The Fast Declining Day. £1 11 6

W. THOMAS.

- *1 Birch and Bracken. 3 guineas
- 2 Disturbed. 4 guineas
- 3 Winter. 3 guineas
- 4 Corner of a Kentish Common. 2½ guineas



GRAVE AFFAIRE.

C. PUYO.

- 5 Autumn. 4 guineas
- 6 Sunset in the Pool. 3 guineas
- 7 A Summer Evening. $2\frac{1}{2}$ guineas
- 8 On the Ebb Tide. 1 guinea
- 9 Twilight. 1 guinea
- 10 Sunset. 1 guinea
- 11 With Breeze and Tide. 1 guinea
- 12 End of a Stormy Day. 1 guinea
- 13 On a Flowing Tide. 1 guinea

BENJAMIN BRECKNELL TURNER.

(Born 1815. Died 29th April, 1894.)

B. B. Turner was one of the founders of the Royal Photographic Society, and as a friend of Fox Talbot was amongst the earliest calotype workers and a contributor of some of the illustrations to "The Pencil of Nature." He was a prominent worker of the paper process, "Scotch Firs" and "Photographic Truth" (see below) having been shown at the Society of Arts Photographic Exhibition in 1852. He exhibited at most of the Society's Exhibitions down to 1875. The collection of his works on exhibition has been lent by his son, H. Fownes Turner, Esq.

- 1 The Church Oak, Hawkhurst.
- 2 Rievaulx Abbey.
- 3 Whitby Abbey.
- 4 Worcester Cathedral.
- 5 Scotch Firs.
- 6 The Head of the Lake, Losely Park.
- 7 Photographic Truth.
- 8 Interior of the 1851 Exhibition.

SAMUEL E. WALL.

- 1 An Evening Ebb. (Carbon.) $1\frac{1}{2}$ guineas
- 2 An Approaching Storm. (Carbon.) $1\frac{1}{2}$ guineas
- 3 A Brisk Day on the Thames. (Carbon.) $1\frac{1}{2}$ guineas
- 4 Flotsam. (Bromide.) $1\frac{1}{2}$ guineas
- 5 On Crymlyn Burrows. (Bromide.) $1\frac{1}{2}$ guineas



GOING TO PASTURE.

RALPH W. ROBINSON.



FLOTSAM.—SAMUEL E. WALL.

COLONEL J. WATERHOUSE.

- 1 The Sphynx. (Autotype Enlargement.)
- 2 The Great Pyramid and Temple of the Sphynx. (Autotype Enlargement.)
- 3 The Mosque of Sultan Hassan, Cairo. (Autotype Enlargement.).
- 4 The Entrance to the Grand Canal, Venice. (Autotype Enlargement.)
- 5 & 6 Two Views in Venice. (Autotype Enlargement.)
- 7 The Rialto Bridge, Venice. (Autotype Enlargement.)
- 8 St. Mark's, Venice. (Autotype Enlargement.)
- 9 Market Place, Hallstadt, Austria. (Autotype Enlargement.)
- 10 Villach, Austria. (Autotype Enlargement.)

J. B. B. WELLINGTON.

- 1 Frame of Studies.
- 2 The Broken Saucer. 5 guineas
- 3 Eventide. 5 guineas
- 4 On the Banks of the Thames.
- 5 Winter. 2 guineas
- 6 "A still delight steals o'er the earth." 5 guineas
- 7 Give me a catch.
- 8 After the Storm.

- 9 The latest news. 4 guineas.
- 10 Sunset.
- 11 Relics of the Past—Hampstead. 5 guineas
- 12 The Village Smithy. 5 guineas
- 13 On Salhouse Broad. 4 guineas
- 14 The Road to the Moor, Matlock. 4 guineas
- 15 The Midday Meal.
- 16 Solitude. 6 guineas.

B. GAY WILKINSON.

- 1 The Peaceful Evening Hour. (Sepia Platinotype.)
- 2 When the Wind is in the East. (Platinotype.) 2 guineas
- 3 A Sunset Calm. (Sepia Platinotype.)
- 4 Down from the Hills. (Sepia Platinotype.) 2 guineas
- 5 Prawning. (Platinotype.)
- 6 The Ebbing Tide. (Platinotype.) £1 10

COLONEL A. H. P. STUART WORTLEY.

(Born 1832. Died, April 30th, 1890.)



COLONEL A. H. P. STUART-WORTLEY.

Colonel Stuart Wortley was an early worker in collodion emulsion and kindred processes, the uranium dry plate and the Wothlytype particularly attracting his attention. Bold cloud effects are the most conspicuous amongst the examples of his work in the present collection, and in facing the sun as he did to obtain most of these, he was one of those pioneers who broke through the photographic tradition against such a method of lighting and the results it yielded. He was a member of the Society from 1862 until 1887, although during his later years ill-health prevented him from taking any very active interest in photography or the Society. We are indebted to his widow, Mrs. Stuart Wortley, of 72 Chapter Road, Willesden Green, for the loan of the collection. The prints exhibited are not themselves for sale, but copies of those which have prices attached can be obtained at those prices on application at the desk.



SHAPOOR
N.
BHEDWAR

- 1-15 Seaside Studies. (Nos. 3, 6, 8, 9, 10, 11, 14 and 15, 16/6.)
- 16 A quiet evening.
- 17 A breeze from the South. 14/6
- 18 The wild west wind. 14/6
- 19 A study of clouds. 14/6
- 20 Catching Sand Eels.
- 21 Hope.
- 22 Clouds.
- 23 The sun his glory shrouds.
- 24 The Dogs of Scilly and their prey. Series I.
- 25 The Dogs of Scilly and their prey. Series II.
- 26 "The day is done and the darkness
Falls from the wings of night." 14/6
- 27 "I stood on the bridge at midnight,
As the clocks were striking the hour,
And the moon rose over the city,
Behind the dark church tower." 14/6
- 28 "The midnight moon is weaving
Her bright chain o'er the deep."
- 29 "All the air was white with moonlight,
All the water black with shadow."
- 30 "The long and level sunbeams
Shoot their light into the water."
- 31 "On the shore."
- 32 "Break Break! Break!
At the foot of thy crags, O Sea!"
- 33 "Wafted by the favouring gales,
She nears her rest."
- 34 "What are hopes but gleams of brightness
Glancing darkest clouds between,
Or foam-crested waves whose whiteness
Gladdens ocean's darksome green."
- 35 Desolate. (Chromotype on opal.) 16/6 carbon; or on opal, £3 3
- 36 Getting ready by Moonlight. (Chromotype on opal.) 16/6
carbon; or on opal, £3 3

- 37 Out Fishing. (Chromotype on opal). 16/6 carbon; or on opal, £3 3
- 38 St. Warner praying for a Wreck. (Chromotype on opal.) 16/6 carbon; or on opal, £3 3
- 39 The Sentinel.
- 40 Chiquita.
- 41 The Stirrup Cup.
- 42 "In maiden meditation fancy free."
- 43 Study of a head.
- 44 Study from life.
- 45 Childhood.
- 46 Pensive.
- 47 Our Pets.
- 48 Bruce and Baudrons.

MAURICE BUCQUET.

- 1 Machine arriere. (Carbon.)
- 2 Le Labour. (Carbon.)
- 3 Retour des Champs. (Carbon.)
- 4 Etude des Bouleaux. (Bromide.)
- 5 La Hutte du Charbonnier. (Bromide.)

MISS FRANCES B. JOHNSTON.

- 1 Windswept Sedges.
- 2 Mistress Anne.
- 3 Portrait in profile.
- 4 Salambo.
- 5 A Study in black and white.
- 6 Little Miss Gainsborough.



"BYRON."

*Negative by THOS. FALL,
London.*

PRINTED BY WELLINGTON & WARD,
ON THEIR PLATINO MATT BROMIDE.



Apparatus and Material for Photographic and Photo-Mechanical Processes.

Stall No. 1.

MAWSON & SWAN,

33 Soho Square, London, W.; and at Mosley Street,
Newcastle-on-Tyne.

Specimens from negatives taken on the "Castle," the "Electric," and the "Mawson" plates. The Castle brand is specially suited for general outdoor work.

Instantaneous work, vessels steaming at full speed, taken from the deck of a steam tug at sea, on the Mawson plate.

Lantern slides made on the Mawson Lantern plates by West & Son, Edgar G. Lee, and John Stabb. Slides showing the variety of tone and colour obtainable on the Mawson lantern plate.

Enlargements made on the Mawson half-tone plates.

Negatives on the Mawson Photo-mechanical plates.

Comparative tests of Orthochromatized plates.

Specimens of half-tone work from negatives by Mawson & Swan's collodion.

Specimens of Three-colour Work from negatives by Mawson & Swan's collodion.

Specimens of Photographic Chemicals, etc., etc.

Collodions, varnishes, mounting medium, retouching medium, plate backing solutions, toning and fixing cartridges, dry plates, etc.

Stall No. 2.

MARION & CO.,

22 and 23 Soho Square, W.

Mounts of all kinds made at the factory of the firm (Courbevoie, France).

Negatives on Marion's plates.

Transparencies on Marion's Gelatine Chloride plates.

Negatives taken by Kenneth J. Tarrant, showing the effects produced by exposing a Marion plate to the electrical discharge of a transformer.

X-ray photographs on Marion's plates.

Photographs on glossy and matt Mariona paper.

Portraits on "gros grain" Mariona paper.

Prints on smooth and on rough Marion's Bromide paper.

Ferro-prussiate print from a tracing. White lines on blue ground. By exposure to light, and simply washing in water.

Metagraphic paper print from a tracing, in black lines on white ground. By exposure to light and simply washing in water.

Gallate de Fer print, from a tracing, black lines on white ground. By exposure to light, and development in one bath.

Ferro-prussiate print, from a tracing, on linen. By exposure to light and simply washing in water.

Enlargements on Marion's rough Bromide.

Square bellows field camera, fitted with Cole's patent flexible rising and falling front; "Empire" Cameras, "Perfection" Camera, Improved "Oxford" and "Swallow" hand cameras, "Radial" hand camera, and the "Camrana" hand or stand camera.

The Actinograph. This instrument is in the form of a slide rule, and is the invention of Messrs. Hurter & Driffield. Its purpose is to give the correct photographic exposure in any part of the world at any hour of the day.

Adhesive film carriers. Sheets of ebonite, coated with an adhesive material so that the films can be stuck down and removed easily. The carrier enables the film to be used in any ordinary camera back.

The following Publications and enlargements:—

George Morland's engravings (a set of six on gros grain Mariona paper).

A Volume of Downey's Art Studies.

A Book of the Empire Series.

A book of the Jubilee Procession. Mechanical prints, also in P.O.P. prints.

A book of the Jubilee Naval Review.

Photographic Sundries of all kinds.

Stall No. 3.

W. WATSON & SONS, 313 High Holborn, W.C.

Examples of Watson's "Acme" Cameras with brass and aluminium mountings.

"Premier" Cameras, Alpha Hand Cameras.

Special Hand Camera fitted with Focal plane shutter for instantaneous exposures up to 1/1000 of a second.

Watson's New Patent Hand Camera, the "Fram" (registered).

This is a magazine Camera carrying 24 films which are interleaved with cardboard or other backing, the operation required for changing being as follows. The magazine is pivoted at the top, and by a swinging motion backwards the film and the backing are together released and fall into a reservoir below, and when the magazine is pushed forward into its vertical position again another film is projected into position for exposure.

A New Studio Camera and Stand.

Dark Slide for Lippmann Colour Process.

Ives Krömskōp, also Ives Multiple Back for taking negatives, transparencies from which are shown in a special Krömskōp in their natural colours.

New Panoramic Camera.

Examples of Studio Stands, Field Tripods both in wood and aluminium.

Examples of Watson's Lenses—Rapid Rectilinear, Wide-Angle Rectilinear, Landscape and Premier Portrait forms in brass and aluminium mounts.

Examples of Taylor, Tunncliffe & Co.'s Porcelain Trays, Washing Troughs, etc.

Special Apparatus for Photo Micrography from the designs respectively of Mr. Andrew Pringle and Mr. E. B. Stringer.

Stall No. 4. J. H. DALLMEYER, LTD.,

25 Newman Street, W.

The New Stigmatic Lens, $f/6$, Series II., angle 85° . The front and back combinations may be used separately as single landscape lenses, focus $1\frac{1}{2}$ times, and twice that of the entire lens.

The Stigmatic Lens, Series I., $f/4$. Portrait combination. The merits claimed are great flatness of field, and freedom from astigmatism over a much larger field than is possible with the ordinary portrait lens.

Portrait Lenses, Series C, $f/2.2$, of the ordinary, or Petzval form.

Portrait Lenses, Series B, $f/3$. Dallmeyer's form with arrangement for introducing "Diffusion of focus."

Portrait Lenses, Series A, $f/4$. Dallmeyer's, form with arrangement for introducing "Diffusion of focus."

Portrait and Group Lenses, Series D, $f/6$. Dallmeyer's form with arrangement for introducing "Diffusion of focus."

The Dallmeyer-Bergheim Lens, with variable length of focus, giving large images with comparatively short camera extension. A considerable amount of spherical and chromatic aberrations are introduced in order to secure softness of definition.

Rapid Rectilinear Lenses, as are generally used. J. H. Dallmeyer's patent.

Wide-Angle Rectilinear Lenses. Can be used over an angle of at least 100° when a small aperture is employed.

Rapid Landscape Lenses, full aperture, $f/10$.

Wide-Angle Landscape Lenses. Aperture $f/14$.

Stereoscopic Lenses.

Special "B" lens, $f/4$, 2" equiv. focus, for taking Cinematographic Negatives.

Special Lantern Lenses and Condensers.

Special Projection Lenses for Cinematographs, $f/2.2$, 2" equiv. focus.

Telephotographic Lenses and Attachment.

N.B.—For descriptions and figures of the above lenses, see that part of the Catalogue devoted to Section I.

Burchett Colour screens, for use with ordinary or isochromatic plates.



LIEUT.-COL. J. GALE.

De la Crouee's Selective Shutter. This instrument is designed to equalise the illumination over the entire field of photographic lens, reducing the intensity from the centre outwards, while allowing the whole of the available light to act upon the margins of the plate. It admits of a longer exposure being given to any particular portion of the picture.

Studio Camera, with all movements, including rack adjustment to swing back.

Field Cameras of standard model, with conical or parallel bellows.

Light Model Field Camera, with Conical bellows.

Dallmeyer's Special Sanderson Camera, with patent swing front.

The Dallmeyer Hand Camera, with improved dark slide, with corrugated steel shutters.

The Naturalist Hand Camera, for obtaining large images of distant objects, birds, animals, etc., fitted with Rapid Telephotographic Lens and focussing Telescope Finder.

Portable Folding Hand Camera.

Popular Hand Camera, with magazine for 24 quarter-plates, fitted with new Stigmatic Hand Camera Lens, f/7.5.

Premo Cameras, fitted with Dallmeyer Lenses.

New Automatic Changing box for 12 quarter-plates. Can be fitted to any camera.

Stall No. 5. MESSRS. ELLIOTT & SON, Barnet.

- 1 Portrait of Lady. (Carbon, H. W. Barnett.)
- 2 Study, Three Heads. (Carbon, H. W. Barnett.)
- 3 Black and White. (Carbon, F. M. Sutcliffe.)
- 4 Fish Stall. (Carbon, F. M. Sutcliffe.)
- 5 A Nautical Hebe. (Carbon, F. M. Sutcliffe.)
- 6 Under the Capstan. (Carbon, F. M. Sutcliffe.)
- 7 Camels. (Carbon, Thompson.)
- 8 Cows. (Bromide, Walmsley.)
- 9 Specimen Prints on Barnet P.O.P.
- 10 Architectural. (Bromide, J. Bulbeck & Co.)
- 11 Portrait of Child (Toned Bromide, Richards & Co.)
- 12 Snow Scene. (Bromide, Green, Bros.)
- 13 Cattle. (Bromide, Green, Bros.)
- 14 Island and Furze. (Bromide, W. Thomas.)
- 15 Silver Birch. (Toned Bromide, W. Thomas.)
- 16 Head of Derwentwater. (Bromide, Green, Bros.)
- 17 "Disappointed." (Bromide, A. J. Taylor.)
- 18 "Now comes still evening on, and Twilight grey." (Bromide, E. H. Short.)
- 18a The Gloaming on the Marsh. (Bromide, E. H. Short.)
- 19 Maori Girl. (Carbon, Iles.)
- 20 Maori Girl. (Carbon, Iles.)
- 21 "Girl with Apple Blossom." (Red Carbon, H. W. Barnett.)
- 22 Portrait of Lady. (Carbon, Elliott & Fry.)
- 23 Portrait, Gentleman. (Carbon, Elliott & Fry.)
- 24 The Countess of Warwick. (Carbon, Lafayette.)

- 25 Study, Child's Head. (Red Carbon, Elliott & Fry.)
- 26 Study, Child's Head. (Red Carbon, Elliott & Fry.)
- 27 Architectural. (Toned Bromide, Bulbeck & Co.)
- 28 Study. (H. J. Elliott.)
- 29 Specimens, Barnet Platino Matt Bromide paper, Contact prints.
- 30 Specimens, Barnet Carbon tissues, Direct Prints.
- 31 Palais de Justice, Brussels. (Bulbeck & Co.) Barnet Snow Enamel Paper.
- 32 High Crag and Head of Buttermere. Bromide. (Green Bros.)
- 33 Study of Cattle, Thirlmere. Bromide. (Green Bros.)

Stall No. 6.

A. & M. ZIMMERMANN,

9 and 10 St. Mary-at-Hill.

Photographic Chemicals manufactured by the Chemische Fabrik auf Actien vorm. E. Schering, Berlin.

Anthion (an eliminator of Hypo. from plates, papers, and films), Bromide of Potassium, Bromide of Cadmium, Celloidine (patent), Hydrokinone, Iodide of Potassium, Iodide of Cadmium, Iron Perchloride, Iron Sulphate, Photo-Formalin (preparation), Pyrogallic Acid.

Schering's bromide, collodio chloride, and gelatine chloride papers.

Developers and pure photographic chemicals manufactured by the Actien Gesellschaft fur Anilin Fabrikation, Berlin.

Eikonogen, crystalline, Rodinal, Paramidophenol, crystalline and powdered, Metol, Amidol, Glycin, Diogen, Diphenal solution, Ortol, Pyrogallic Acid, Hydrokinone, Sodium Sulphite, Sodium Carbonate, Fixing Salt, Toning and Fixing Salt.

A collection of colours for photographic and microscopic purposes.

Plates and films for X-ray work, Dry plate Isolar plates (Non-Halation), Transparency plates.

Papers manufactured by Vereinigte Fabriken Photographischer Papiere, Dresden. Cross swords Brand, Albumenized, Albumenized Sensitized, Kosmos P.O.P. (Collodio Chloride), "Aristo" P.O.P. (Citrate of silver).

Stall No. 7

J. F. SHEW & CO.,

87 & 88 Newman Street, Oxford Street, W.

Shew's Featherweight Camera, Hand or Stand (Patent).

The Focal-plane featherweight Camera.

Shew's Xit Camera.

The Junior Xit.

The Shewgraph Magazine Back, for cut films without sheaths or for glass plates.

Shew's Half-plate and Stereoscopic Xit.

Shew's Universal Stereoscopic Camera.

The Twin lens Xit.

Shew's 1898 Combination stand Camera; weight 3 lbs. 12 ozs.

Shew's Medium Camera.

Shew's Junior Outfit.

Shew's Eclipse Apparatus.

Shew's Focal plane Eclipse Camera.

The Vola Camera.

Shew's 1898 Eclipse Camera.

Shew's Reflector Camera.
 Shew's Rideaux Camera, with Magazine.
 Cyclist Stand in Aluminium.
 Pump clips for attaching above to Cycle.
 Spectacle lenses.
 Fixed focus enlarging apparatus.
 Shew's Cyclist Binocular.
 The Pocket Jumelle for daylight cartridge films.
 Shew's Ano Camera.
 Shew's Pocket Flash Lamp.
 Shew's Lever Focussing Flanges.

Stall No. 8.

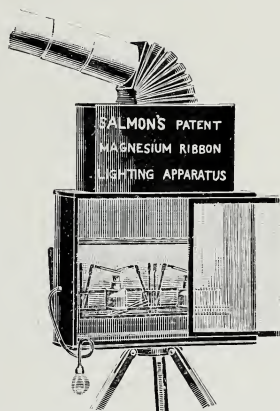
SALMON & SON,
 169 Hampstead Road, N.W.

- 1 Patent Portable Magnesium Ribbon Lighting Apparatus for Portraiture. Constructed to remove entirely the products of combustion.
- 2 Special Tripod Stand for same.
- 3 Salmon's Adjustable Vignetter. (Patent.)

This is adjustable up and down or sideways, remaining clipped by aluminium slides in any position, and, by means of metal grooves, the vignetting card (not serrated) can be placed near or far from negative, or at an angle, and may be quickly changed.

- 4 New Dish Rocker. (Patent applied for.)

Constructed for rocking several dishes simultaneously. It can be made stationary at will, forming a rigid table.



Stall **THE PRESTWICH MANUFACTURING CO.,**
 No. 9. 744 High Road, Tottenham, London, N.

Cameras for Animatography.

Model 1 for lengths of film up to 75 feet.

Model 2 for 75 feet films, which can be reloaded in daylight.

Model 3 for 500 feet film, has automatic feed and winding arrangements, daylight changing boxes, rotary movements to all parts.

Model 4 for films $2\frac{3}{8}$ in. width, having the same arrangements as No. 3.

Projectors for animatography.

No. 1 model for short lengths of films up to 75 feet, rotary movements.

No. 2 model for 75 feet films, rotary movement and "Swing-out" action, enabling the title of the next subject to be shown, quick winding arrangement.

No. 3 model for lengths of films of 2,000 feet, having automatic winding up, feeding arrangement, adjustable masks and different diameter sprockets, enable any make of film to be shown.

No. 4 model, practically the same as No. 3, only for $2\frac{3}{8}$ inch films.

No. 5. The "Prestwich" patent duplex, designed to overcome flicker.

Stall No. 10. **THE PLATINOTYPE CO.,**
 22 Bloomsbury Street, London, W.C.
 Pictures in Platinotype. Black and Sepia.
 Daily Demonstrations of the Platinotype Process.

Stall No. 11. **MORGAN & KIDD,**
 Richmond, London, S.W.
 Enlargements and prints on Morgan & Kidd's Bromide papers, including
 Platino, Matt, Cream, Crayon, Rose Enamel and White Enamel Bromide
 paper.
 Enlargements on Morgan & Kidd's Bromide opals and canvases.
 Bromide enlargements finished in Monochrome, Crayons, Water Colors,
 and Oil Colors.
 Carbon enlargements untouched and finished.
 Platinotype enlargements, ditto.
 Miniatures on Ivory with photographic basis.
 Vitrified Enamels. Photographs fired into enamelled copper plaques in
 Monochrome tints and in colors.
 Collotype Printing. Imitation silver prints, imitation Platinotypes.
 Book and Catalogue Illustrations, etc.
 Half-Tone Typographic Printing blocks.

Stall No. 12. **JOHN J. GRIFFIN & SONS, LIMITED,**
 22 Garrick Street, Covent Garden, W.C.
 Nepera Chemical Company's "Velox" development printing papers.
 "Velox" is a chloro-bromide paper with a slow emulsion, and requires an
 exposure, with an average negative, of from one to eight seconds to diffused
 daylight, or from 20 to 40 seconds to an ordinary gas-jet, at three inches
 distance. Development can be effected with Metol, Amidol, or Metol-Quinol,
 prepared according to the published formulae.
 "Climax" Sensitized Albumen Paper, manufactured in two qualities,
 "soft" and "brilliant," adaptable to different densities of negatives.
 "Rex" Printing-out-paper. A gelatine emulsion paper with a hardened
 film which can be worked without alum or other hardeners in the hypo
 bath, and can be toned in a separate gold bath without Sulpho-cyanide. The
 usual toning baths, such as those used for albumen paper, may be employed.
 "Rubens" P. O. P. (collodio-chloride paper).
 Nepera Bromide Papers, made in three qualities, platinoid, rough surface
 and glossy or enamelled surface. Contact prints and enlargements.
 Model of Photographer's Studio, fitted with designs of backgrounds and
 accessories, showing Griffin's adjustable background carrier, new pattern
 Studio Camera on stand, lighted with Arc Electric Light.
 Acme Burnishers.
 American printing frames.
 New pattern of folding and rigid portable hand-cameras.
 "Silver Gloss" Starch
 Mounting Solutions and other materials, and Chemicals for Photographic
 purposes.
 Photographic Mounts of various kinds.

"M. Q." Developers in packets and tubes.

Griffin's Process Camera with patent screen adjustment and lever movement shown on swing with patent rack and moving easel.

Copper and Zinc polished plates for photo-engravers, specimens of plates at different stages of production, etc. New pattern whirlers, process printing frames, and engravers' arc electric light.

Exhibit of X-Ray Apparatus, Fluorescent Screens and other appliances.

Stall No. 13. GEORGE HOUGHTON & SON,

88 and 89 High Holborn, W.C.

Sanderson's Improved Universal Swing Front Camera (Patent).

The "Triad" Folding Pocket Hand Camera (Patent).

The Shuttle, Holborn, Expert, Ranger, Stereoscopic, Sporting, Scientific, Binocular, and Vigilant Hand Cameras.

The Victo and Empress Camera Sets.

The Perfect Studio Camera.

The Holborn Cameras.

The Ladder Camera Stands.

Tripod Stands.

Houghton's Studio Shutter (Patent).

(The general nature of this shutter can be seen from the cut herewith. It operates silently and opens and closes centrally.)

Pocket Kodak Enlarger.

Travelling Developing Cabinet.

Helvetia Burnishers.

Maloni's Patent Flash Lamp.

Rockwash Rocker (Patent).

Professional retouching Desk.

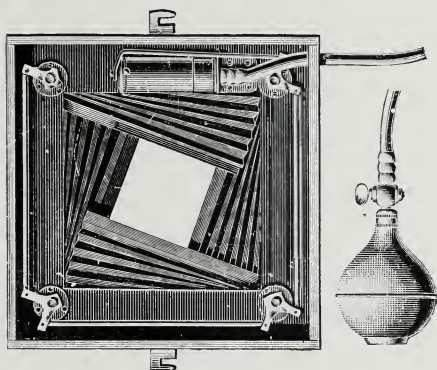
Radiotint Process for colouring Photographs.

Ball Bearing Roller Squeegee (Patent).

Studio Reflecting Screens.

Bromide Printing Frames (Patent).

Photographic Sundries.



Stall No. 14.

PENROSE & CO.,

8 and 8a Upper Baker Street, Lloyd Square, London, W.C.

The "Mammoth" Process Camera. This camera, which is believed to be the largest made, at any rate for process work, will take a plate 6 feet by 5 feet, but this size can only be utilized for line work and ordinary copying, as the Levy screens necessary for the half-tone process can only be obtained up to about 40 x 30 inches. It is intended that the back part should be built into the partition wall of a dark room, so that the latter would really

form the dark slide, otherwise a holder of sufficient dimensions would be extremely heavy and cumbersome. By enclosing the rear of the Camera as a dark room, the plate would be placed direct into the back part of the Camera, being held in position by adjustable bars, which take any size from whole plate up to the full capacity of the Camera. The full extension of the Camera is 12 feet, so that when using a lens of about 60 inches principal focus, it is possible to copy same size as the original. To provide for the use of lenses of shorter focus, the middle body of the Camera is provided with a plate holder, and, by means of a door in the side, the operator can enter. This part of the Camera forms a little room about 7 feet \times 3 feet, in which at least two persons can stand and watch the operation of focussing the image and exposure. The lens fitted to this Camera is of the Symmetrical type, specially made for copying purposes by Ross, Ltd. It works at $f/11$, and has an equivalent focus of 60 inches. It is intended, during the Exhibition, to allow visitors to enter the Camera and view the interior.

A Copyboard for Process Work, is shown in conjunction with the process Camera, for centring the picture to be copied. It runs to and from the Camera on rails. The centre portion of the board is provided with a rotatory movement for turning the picture to different angles in three-colour work, so as to secure the proper crossing of the lines.

Electric Arc Lamps for Process Copying and Printing. These have spherical reflectors for directing a constant and steady illumination, upon the copy, or printing frame, dispensing with daylight altogether. They are provided with stands for making the necessary adjustments.

Condensers for Arc Lamps. These are fitted to stands with universal adjustments for raising, lowering, and centring the light.

The Reliance Press, is a new form of hand-printing press for proving Process blocks. It will print a block the full size of its bed.

Demonstrations of process block proving will be given at certain times during the Exhibition.

Improved Incandescent Gas Light. Two patterns are shown, one on vertical stand for copying, contact printing, etc., and a horizontal pattern for the lantern. The modifications consist essentially in providing for a better mixture of gas and air, the introduction of a large volume of air and more perfect combustion.

Stall No. 15. THE AEROGRAPH CO., 30 Memorial Hall, near Ludgate Circus, London, E.C. The Aerograph.

This is an instrument on the lines of the old air-brush, and can be employed for finishing and working up photographic enlargements, such as carbon prints, platinotypes, bromides, etc., as well as for colouring them.



It is applicable also to other arts, such as drawing in colours, porcelain painting, tapestry painting, etc., etc. The apparatus consists first of the tool which is held in the hand and which contains a receptacle for the colour



BEFORE.



AFTER.

REPRODUCTION OF A BROMIDE ENLARGEMENT BEFORE AND AFTER WORKING UP WITH THE AEROGRAPH.

together with a lever or button by which the air current can be controlled, and the amount of the colour which is allowed to pass out regulated; and second of a force pump actuated by the foot, connected with the tool by a flexible rubber tube, and serving to work the tool on the ejector principle, using the blast of air to impel a spray of colour upon the subject.

The Exhibit of the Company consists of a number of enlargements, etc., which have been finished and coloured with the Aerograph, specimens showing the application of the instrument to other purposes, etc.

A demonstration of the use of the Aerograph will be given each day the Exhibition is open, from 3 p. m. to 5 p. m. Photographic enlargements will be finished both in monochrome and colours, and drawings will be executed in black and white and water colours.

We give on page 139 a reproduction from two bromide enlargements, the one before and the other after working up by means of the Aerograph.

Stall No. 16. WATERLOW & SONS, LTD.,
Finsbury Stationery Works, F.C.

Collotype Printing.
Chromo-Collotype Printing.
Woodbury Printing.
Glyptotype Printing.
Half-Tone Etching on Copper.
Line Etching on Zinc.
Photogravure.
Heliochrome Engraving and Printing.
Chromo Zincography.

Stall No. 17. JULES RICHARD, FONDATEUR,
8 Impasse Fessart, Paris.

The Verascope Hand Cameras.
The Homeoscope Hand Cameras.
Aluminium Tripods.
Pneumatic Shutters.
Apparatus for cutting negatives for stereoscopic printing, diamond, guides, etc.
Magnesium Lamps.
Stereoscopes, etc.
Bridges Lee Photo-theodolite, etc., etc.

Stall THE NATURAL COLOUR PHOTO CO., LTD.,
No. 18. 12 Gt. Brunswick Street, Dublin.

The Joly Process of Colour Photography.

This process depends on the fact that compound colours may be produced by placing their constituents side by side in lines; these lines, if sufficiently fine, cannot be distinguished separately, and thus in the eye are automatically combined.

- 1 Apparatus illustrating the Theory and Practice of the process.
- 2 Natural Colour Photographs, viz., flowers, birds, butterflies, pictures, landscapes, &c.

3 Stereoscopic Pictures.

The above photographs will be shown by gas-light, day-light, and in the Electric Lantern.

Stall No. 19.

J. R. GOTZ,
215 Shaftesbury Avenue, W.C.

Two frames with specimen of Gotz's heliographic processes, of ferro-gallic and of ferro-prussiate printing.

Stall No. 19. THE GRAPHIC ART SOCIETY,
Geneva.

Samples of collotype printing.

Landscapes. Imitation albumen, platinum, carbon and copper plate prints.

Portraiture in the style of platinum or of silver.

Reproductions of oil paintings, engravings, machinery, furniture, &c.

Samples of half-tone etching.

Samples of Chromogravure in three colours for the reproduction of paintings, water colour drawings, &c., and for advertising purposes.

(Photographs artificially coloured or taken by plates representing separate colour values).

Stall No. 20.

YORK & SON,
67 Lancaster Road, Notting Hill, W.

- 1 Optical Lantern Slides made by Reduction in the Camera.
Wet Collodion, toned with Bichloride of Platinum.

Stall No. 21. HENRY LAMPLOUGH, LTD.,
167 Strand, W.C.

The "Avery" Backing. This is a preparation which dries hard in four minutes, and can be removed with sponge moistened with water.

The "Avery" Stripping Solution, for the transference of gelatine films.

Stall No. 22.

J. H. STEWARD,
406 Strand; 457 West Strand, W.C.;
and at 7 Gracechurch Street, E.C.

Registered Triple Lantern with Jets, improved dissolving system, etc., etc., and a complete set of front lenses of various foci.

"Perfect" Bi-Unial Lantern, with large diameter front lenses of various foci. Double curtain shutter with rackwork. Protection glasses to condensers and registering masks to stages. Dissolver with pull out plug.

Electric Light Single Lantern, with adjustments for perfect centering of light. Extending foot board and supports, condenser and achromatic front lenses. Improved arc lamp.

Photogenic Lantern, with three wick paraffine lamp, condenser, and achromatic front lenses, brass stages, mahogany body, lined with tin.

Tin body photogenic lantern, with three wick lamp and achromatic front lenses.

"Economic" 4 inch lantern, with three wick lamp and racked front lenses.

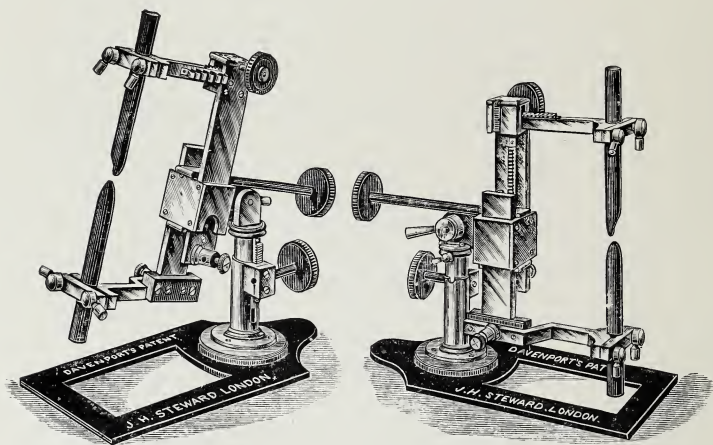
The "Institution" Lantern, with Telescopic front for long and short focus lenses.

"Club" Lantern, with objectives $2\frac{3}{8}$ inches diameter, and reversible fronts, with jets of blow-through pattern, and doors for tinter slide.

Bellows-fronted Single Lantern.

Incandescent Gas Lantern with Lenses.

"Davenport-Steward" Universal Electric Arc Lamp with adjustments. It is so geared that the two carbons are fed together at practically the same rate as they are consumed. The plan of the lamp is such that the distance from the condenser of the lantern is preserved during the feeding and using of lamp after once the adjustments are made.



Portable form of Cinematographe, for adaptation to any optical lantern.

Lantern Microscope, fitted with condenser and centering adjustments.

Lantern Polariscope, with fittings and adjustments.

"Omni" Camera, for long focus lenses, turntable, rising, falling, and swinging front of large size, focussing adjustment to back.

The "Steward" Hand Camera, in two patterns; A for 12 plates; B for 30 cut films, with time and instantaneous shutter, rising front, supplemental lenses, automatic indicator, and memo. tablet.

The "Holiday" Hand Camera, with Rapid Rectilinear lens, and Time and instantaneous shutters.

No. 2 Holiday Hand Camera, with achromatic lens, Iris diaphragm, Time and instantaneous shutters.

Resistances, gas regulators, lantern stands, jets, lantern slides, cinematographe films, etc.

Stall
No. 23.

R. W. THOMAS & CO., LTD.
Thornton Heath.

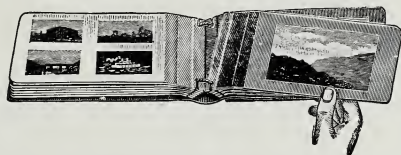
Negatives [on Thomas's plates and films.
Prints from negatives on Thomas's plate.
Negatives on Thomas's Isochromatic plate, showing colour values.
Negatives on Thomas's Isochromatic plate, using yellow screen.
Same subject on ordinary plate show difference.
Prints on Thomas's P.O.P. paper, with lime, and with acetate toning.
New system of packing plates, without wrapping papers.
Thomas's collodion, developers, varnishes, and other specialities.

Stall No. 24. CARTER'S INK COMPANY, 7 Bunhill Row, E.C.
Carter's Photo-library Paste.

This is a smooth white paste containing an antiseptic, free from acid and specially made for the mounting of photographs, engravings, etc.

The Gilson Adjustable Album for Photographic Views.

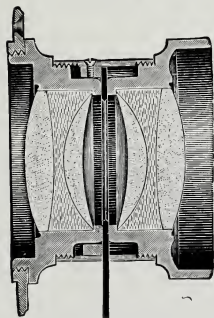
The leaves in this album are so arranged that they can be increased or decreased in number in a moment. The Album will hold from one or two



photographs up to its maximum number equally well, each being gripped by means of silk cords at the top and bottom which enter deep slots in the leaf, as can be seen from the cut.

Stall No. 25. C. P. GOERZ, Optical Works, Friedenau, Berlin.

Photographic Lenses, Goerz's Double Anastigmats, Series III., $f/7.7$.
Goerz's Double Anastigmats, Series III., $f/7.7$, in special mounts.
Goerz's Double Anastigmat, Series IV., $f/11$, for process work.



Goerz Double Anastigmat.

The New Goerz Ten-
lens Anastigmats.

Photographic Appara-
tus.

Goerz-Anschutz folding
Cameras.

Changing boxes.

Anschutz Hand-camera.

Goerz-Anschutz Stand

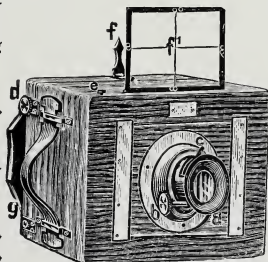
Camera.

Goerz - Anschutz Slit-
shutters.

Goerz Sector Shutters.

Magnifying Glasses,
ball and socket joints,

etc., etc.



Anschutz Hand Camera.

Stall No. 26.

ADAMS & CO.,

26 Charing Cross Road, London, W.C.

The "Yale" hand camera.

The "Ideal" hand camera.

The "Vesta" hand camera.

The "Twin Lens" hand camera.

The "Adams de Luxe" hand camera.

Photographic Apparatus and appliances and materials of all kinds.

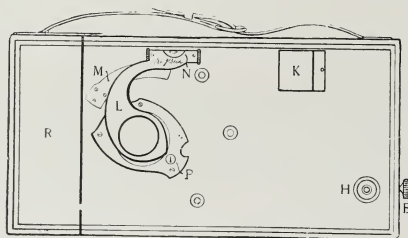
Photographic and kindred publications, X-ray Apparatus, etc., etc., etc.

Stall No. 27.

R. & J. BECK, LIMITED,

68 Cornhill, E.C.

The Frena Camera, in three sizes, 5×4 , quarter plate, and $3\frac{1}{2} \times 2\frac{5}{8}$. These use flat films contained in a metal box, which is swung on centres within the camera, and is attached to the handle (L), with the first film facing



The Frena Camera.

the lens. The films are notched along the edges, the notches being so arranged that if each alternate film is turned end for end, the notches, instead of being opposite each other, will be alternate in every consecutive film. The films are supplied in packs with the notches arranged alternately, and with a piece of opaque card between each to prevent light passing through one film to the next. The pack of films thus supplied is placed in the metal holder of the camera, and pushed forward by a spring back till it rests against a series of teeth which project inwards from the sides of the box; these are situated in these portions of the edges of the foremost film where the notches do not exist, so that the entire pack is supported against these teeth and held in position. To remove the exposed film, the camera is held with its lens end pointing upwards, and the handle (L), is revolved half a revolution, thus turning the metal holder which carries the film. By so doing the pins are moved along the edges until they are in the notches of the first film, which, being no longer supported, falls into the back of the camera, the rest of the pack being supported by the pins, because the notches are in an alternate position. One film only, together with its interleaving card, is dropped for one turn of the handle, the handle being returned to its original position, and the next photograph may be taken. When the handle is turned the second time, the pins are moved back to their original position and the second film is dropped, and so on, each turn of the handle depositing one film into the camera back. An indicator at (P), Fig. I., records how many photographs have been taken.



LADY EDITH VILLIERS.

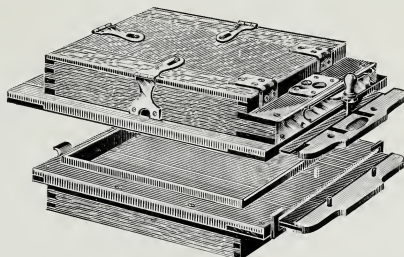
HALF TONE ENGRAVING ON COPPER,
..... BY
THE STRAND ENGRAVING CO., LTD.,
ASSOCIATED WITH
THE ART PHOTOGRAVURE CO., LTD.,
146, STRAND, LONDON, W.C.

Photo by Lafayette.

The design has been utilised to provide a swing back, which may be used about 20° either way. A spirit level in the handle indicates when the film itself is plumb. The camera is provided with two view finders. The shutter works between the lenses, and consists of a pair of identical superimposed circular plates, with an aperture some four or five times the diameter of the lens aperture. These plates always revolve at the same speed whatever length of exposure is required. As the plates are revolved the aperture before mentioned passes across the aperture of the lens and makes the exposure. With this large aperture the exposure given is one-fifth of a second. By turning one of the two superimposed plates, with reference to the other the aperture is reduced in size, and thus a shorter exposure is given. In this way speeds from one-fifth to one-eightieth of a second are made. Instantaneous or time exposures can be given. The lens of three out of the four Frena cameras is a Beck "Autograph" Rapid Rectilinear working at $f/8$, while the fourth has a single lens by Beck, with an aperture of $f/11$. All are provided with diaphragms. For photographing near objects low power supplementary lenses, termed Frena Magnifiers, are supplied enabling objects as near as 7 inches to the camera to be focussed.

Frena Magnifiers.

The Frena Film Holder. This consists of a magazine which carries a pack of 20 notched films. The magazine slides on to the camera like a



The Frena Film Holder.

double back. To change a film, it is removed from the camera and locked on to the receiver; the shutters of the magazine and receiver interlock, and are pulled out together, when, by pushing a button, one film is dropped into the receiver on the sorting teeth principle employed in the Frena Camera. Thus one by one the films are transferred to the receiver as exposed.

"Autograph" extra rapid Rectilinear Lenses. These lenses have aperture $f/4$ on the doublet type. Iris diaphragms, fixed mounts.

"Autograph" Rapid Rectilinear Lenses. These lenses have aperture $f/8$ on the Rapid Rectilinear doublet type.

"Autograph" wide-angle Rectilinear Lenses. These lenses have aperture $f/16$ on the doublet type.

"Autograph" Combination Lenses. These lenses have aperture $f/11$ on the doublet type, with arrangements for using a series of different focus lenses in one mount, on the casket system.

"Autograph" wide-angle single Lenses. These lenses consist of three cemented lenses with aperture $f/16$.

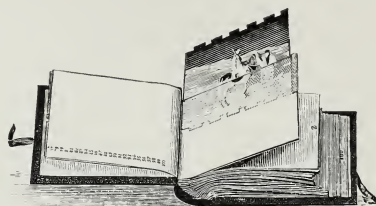
"Autograph" narrow angle view lenses with aperture $f/16$.

Stand Cameras, Square and Folding taper bellows models.

Tripods.

Frena Films.

Frena Store Albums. The leaves are in the form of envelopes (transparent), so that the negatives may be examined without taking out. The leaves are numbered, and an index provided at the end.



Frena Store Album.

Frena Cycle Carrier.

Skate Blade Print Trimmer. This consists of a square board, with a graduated ledge on one side, and a steel plate at the right angle edge, against which a pivoted hollow ground blade works and cuts the print which is laid upon the flat board, the portion to be trimmed off overhanging the steel edge.

Phototone spectacles, made of spectrum green glass of such a colour that the wearer sees a monotone view as it will be reproduced by the photographic plate.

Bynoe printing frame. This is made of metal with wood back. The print is held by a clip at the top. The whole wooden pressure-board folds out for examination of the print, the whole of which may be examined at once.

Perfection Flash Lamp, Enlarging Lanterns, Microscopes, Developing and Printing apparatus.

Lantern and Lantern Slides, etc.

Stall No. 28. THE ROTARY PHOTOGRAPHIC CO.,

10 & 11 Austin Friars, London, E.C.

Bromide paper prints produced in continuous lengths by machinery. The print suspended below the awning exceeds 300 feet in length, and is made in one piece.

Stall No. 29. WELLINGTON & WARD,

Elstree, Herts.

Platino Bromide Paper in the following grades:—

Smooth surface, suitable for small contact work.

Rough surface, suitable for enlargements. etc.

Tinted rough, a cream crayon.

Special thick (like thin card).

Whatman Rough-made drawing, suitable for very large heads and for broad effects.

Enamme, a highly glazed surface paper, resembling when finished a cold toned P. O. P. print.

Special double Bromide (coated on both sides). This is particularly suitable where prints are required on both sides of the paper, such as copies of books, etc.

These Bromide papers are applicable to ordinary printing as well as to automatic machine printing in a continuous band where large quantities of prints (purely photographic) are required for book illustrations, and other publication purposes. (See the print inserted facing page 129.)

It is possible to print 5,000 to 10,000 per day by this method.

Sylvio Gelatino Chloride paper, suited for the Phosphate toning bath.

Sylvio Special, suited for the Sulphocyanide toning bath (a new introduction.)

Sylvio Matt, possesses the same features as above, with a matt surface.

Negative paper. Spools and cut sheets.

Stall No. 30.

ROSS, LTD.,

111 New Bond Street, W., and 31 Cockspur Street, S.W.

Ross' Symmetrical Lenses, rapid, extra rapid, portable, and wide angle. Ross' Hand Camera Lens in new form, focussing jacket allowing exact adjustment to hand cameras in which distance between the front and ground glass varies slightly.

Ross' Portrait Lenses.

Ross-Zeiss. Series II. Anastigmat Lenses, $f/6.3$.

Ross-Zeiss. Series IIa. Anastigmat Lenses, $f/8$.

Ross-Zeiss. Series IIIa. Anastigmat Lenses, $f/8$.

Ross-Zeiss. Series V. Anastigmat Lenses, $f/16$.

Ross-Zeiss. Series VII. Anastigmat Lenses, $f/12.5$.

Ross-Zeiss. Series VIIa. Anastigmat Lenses.

Sets of Ross-Zeiss convertible Anastigmats. Set C consisting of 3 single Lenses and giving a range of 6 different foci.

Ross-Zeiss Planar Lenses, $f/4$.

Ross' Concentric Lenses, $f/16$.

Ross-Goerz Double Anastigmat Lenses, Series III., $f/7.7$.

Ross-Goerz Double Anastigmat Lenses, Series IV., $f/11$.

Description and figures of the above have already been given, Section I.

Ross' Cameras, various patterns for field and studio.

Ross' New Film Camera, constructed to carry 48 cut films, and will take a smaller number of plates equally well; no sheaths are required.

Ross' Portable Twin-Lens Camera. A new patent folding model, more compact than the old pattern.

Ross' New Patent Science Lantern. It is double fronted, each end carries a triple condenser. One front is for parallel beam work, and will carry a microscope, polariscope, or any other desired optical arrangement, while the various sections of the condenser are removable if required. The other front takes slides, tanks, diagrams, &c., and may be used for either horizontal or vertical projection. The one exhibited is adapted for use with a lime-light jet.

Ross' Patent Combination Lanterns for projection, scientific purposes, or enlarging.

Ross' Patent Enlarging Lanterns.

Ross' Arc Lamps for Lanterns.

General Optical and Photographic Sundries.



A WAYSIDE SHRINE.

E. CECIL HERTSLET.

Pictures taken with Ross Lenses.

Ross' Photoscope, is a marine, field or Opera glass, which when fitted with the patent appliances will photograph the object seen through it. It takes rolls of film containing 24 exposures, and can be loaded in day-light.

"PHOTO" LTD. (Late CRESCO-FYLMA & HANNAM LTD.)

Stall No. 31. 72 and 74 Gray's Inn Road, W.C.

Cresco-Fylma. This is a solution which when applied to a gelatine film on glass or celluloid causes it to strip and expand. The expanded film is remounted and the photograph in this way enlarged. Demonstrations will be given of the process and of intensifying, reducing, toning, etc., by the firm's preparations for the purpose.

Ready prepared developers and toning solution.

Uranotype. This method of printing in Bartolozzi red, green, blue, etc., will be demonstrated.

The Kara, Cameras.

The Sunbeam hand or stand camera.

Photographic mounts, including the Gainsborough, Kensington, Victoria, and other patterns.

Stall No. 32.

J. LIZARS,

101 & 107 Buchanan Street,
Glasgow.

20 High Holborn,
London, W.C.

And at 2 & 4 Maitland Street, Edinburgh; 23 Victoria Street, Belfast; 28 Bridge Street, Aberdeen; Factory: Golden Acre Works, Craignestock Street, Glasgow.

The "Challenge" Hand Camera, for hand and stand work, with Thornton Pickard shutter, 3 double slides and lens.

Challenge Hand Camera, Double extension model, with 3 double slides and lens.

"Model C" Challenge Hand Camera, for hand and stand work, with Bausch & Lomb shutter, 3 double slides, and lens, and finder.

"New Challenge" Set, comprising Camera, double slide, Lens, Thornton Pickard shutter and Tripod.

Challenge Stereoscopic Camera taking half-size plates, with Thornton Pickard shutter and 3 dark slides.

Quarter-plate Challenge Twin Lens Camera, with 3 slides, Bausch & Lomb shutter, and lenses.

Half-plate "Combination" Camera set, comprising camera, dark slide, Thornton Pickard time and instantaneous shutter, Tripod, Case and rectilinear lens.

Quarter-plate Rambler Camera for hand and stand exposures, with 3 slides, Thornton Pickard Shutter and Challenge Lens.

Quarter-plate Victor Camera set, comprising Camera, dark slide, Rectilinear Lens and Tripod.

Challenge Film Camera carrying 50 films or 24 plates at will.

Challenge Daylight Camera carrying $3\frac{1}{4} \times 3\frac{1}{4}$ Film cartridges.

Challenge Film and plate Magazine camera carrying $\frac{1}{4}$ -plate daylight cartridges or 12 quarter plates at will.

Half-plate Challenge Wide Angle Landscape Camera, conical pattern.
Quarter-plate Daylight Attachment for using Daylight cartridge films on any ordinary camera.

The Perfect Changing Box.

Challenge Lightning print washer, takes 24 whole plate or smaller size prints.

Challenge film carrier.

Challenge Tripods.

Challenge Walking-stick stand.

Challenge Brilliant view finder.

Prize medal Dark Room Lamps.

Mechanical Stereoscope.

Challenge Lantern, polished mahogany body, with panelled door, with 4-wick lamp or lime jet, in case.

Corporation lantern, Mahogany body, pair of side doors, bellows front, $4\frac{1}{2}$ inch condenser, and $6\frac{1}{2}$ and 11 inch objectives with mechanical lime jet, having all its adjustments regulated by screw movement, in case.

Biunial Lantern, with lime light jets, and objectives.

Mechanical lime-light jet blow through and mixed patterns, having adjustments regulated by rack and pinion.

Stall No. 33. THE PROSSER ROBERTS COMPANY,

13 Church Street, Camberwell; and at 323 Walworth Road, S.E.

The Prosser-Roberts Hypo Bottle.

The Prosser-Roberts Monochromatic View Meter.

The Prosser-Roberts Ammonia Meter.

Premo Cameras.

The Prosser-Roberts Lined Focussing Screen, divided into square inches by lines etched into the glass.

The C. H. O. Lantern Mask Outlines. An uncut Lantern Mask for making openings to suit reductions from any size negatives.

The C. H. O. Focussing Screen.

The Prosser-Roberts Anti-halation Pads.

Pure Photographic Chemicals.

Stoppered Bottles with white enamelled labels.

Changing bags.

Focussing Cloths.

The "Architect" and "Viewland" Cameras.

Mattit. A substitute for finely ground glass.

Radiographic Requirements.

Sundries.

Stall No. 34.

McKELLEN & CO.,

4 Bull's Head Yard, Market Place, Manchester.

McKellen's "Infallible" hand camera, No. 3, with McKellen's lever safety shutter. This has four speeds, ranging from $\frac{1}{25}$ to $\frac{1}{100}$ second.

It has an automatic back shutter, by which the act of opening the front closes up the back of the lens, and the act of closing and fastening the front again automatically opens the lens. It is fitted with Heywood's direct vision view finder, consisting of a wire frame and an eye-piece both attached to the camera top, and hinged to stand at right angles to it, when in use, and



TRAU GATE.

JAMES A. SINCLAIR.

to fold down when not in use. The wire frame is the same size as the plate carried in the camera, and is placed the same distance in front of the eye-piece as the focal length of the lens. The camera holds one dozen glass sheaths, or two dozen film sheaths, or they—plates and films—may be mixed indiscriminately.

McKellen's "Infallible" hand camera. No. 4, contains, in addition to those fittings above mentioned, a focussing rack and scale.

McKellen's "Infallible" hand camera, stereoscopic size, contains all the movements and fittings described in connection with exhibit No. 2, together with automatic apparatus, removing stereoscopic division when the plate is changing, and replacing it when the plate has passed.

McKellen's Double Pinion Treble Patent Cameras. Half-plate, whole plate, and 10×8 sizes, as made in 1884. This camera has the following movements, back, forward, and side swing of body, swing front, turntable, double pinion focussing long or short focus lenses, without unshipping any part, and is provided with a means of covering half of the plate to enable two pictures to be taken on one plate if desired. It has a rising front, enabling the lens to be raised to the top of the plate without tilting the camera or cutting off the picture.

McKellen's Double Pinion Treble Camera. This camera is made with all the movements above mentioned, but is made specially small and light, with aluminium fittings.

Stand Camera, of ordinary parallel bellows form, combined with Heywood's direct vision view finder, to dispense with the use of the ground glass and focussing cloth.

McKellen's Tripod. Three-fold tripod, with lozenge-shape slide.

McKellen-Heywood View Finder and View Meter.

McKellen's Flash Lamp.

**Stall No. 35. ILIFFE & SON,
3 St. Bride Street, E.C.**

- 1 Books and Periodicals relating to Photography.

**Stall No. 36. HENRY GREENWOOD & CO.,
24 Wellington Street, Strand, W.C.**

The British Journal of Photography.

The British Journal Photographic Almanac.

**Stall No. 37. THE PHOTOGRAPHIC NEWS,
9 Cecil Court, Charing Cross Road, W.C.**

"The Photographic News" (Weekly).

The Year Book of Photography.

**THE METALLIC PHOTO-PRINTING SYNDICATE, LTD.,
Stall No. 38. New Southgate, N.**

These are prints by a patent process. The bichromated film containing honey and dextrine is exposed to light under the negative. The image is formed by dusting on finely powdered metal, and is subsequently trans-

ferred to a wooden panel, and coated with a varnish, for which great durability is claimed. The specimens shown are in gold, silver and copper, (Further particulars can be found in the Photographic Journal, Vol. XXII., p. 132.)

Stall THE LONDON PHOTOGRAPHIC SUPPLY CO.,
No. 39. 134 Borough, S.E.

Kalos Pocket Camera.

A mount for military photographs, emblazoned with the colours and crest mottoes and badges of each regiment.

General Photographic apparatus and sundries.

Stall No. 40. THE GUTENBERG PRESS LIMITED,
123, 124 and 125 Fleet Street, E.C.

The Optician and Photographic Trades Review.

Science Siftings.

The Optician's Handbook.

Other Publications of the Gutenberg Press, Ltd.

Stall PERCY LUND, HUMPHRIES & CO., LTD.,
No. 41. 5 Godwin Street, Bradford.

The Practical Photographer.

The Junior Photographer.

Process Work and the Printer.

The Popular Photographic Series.

The Lund Library of Photography.

Miscellaneous Photographic Literature.

The Sunny Memories Album.

The Pocket Camera Album, to hold 176 prints.

The Impressionistic Album.

A Variety of special mounts for Amateurs.

The Process Year Book.

Specimens of Printing in one and more colours and of bookbinding.

Stall No. 42. THE PHOTOGRAM, LTD.,
6 Farringdon Avenue, E.C.

The Photogram; a monthly magazine.

The Process Photogram; a monthly magazine.

The American Photogram; a monthly magazine.

Books on Photographic and kindred subjects by British and foreign publishers.

Examples of modern photography, notably of American portraiture.

Stall "THE AMATEUR PHOTOGRAPHER,"
No. 43. 1 Creed Lane, Ludgate Hill, London, E.C.

The Amateur Photographer. (Editor, A. Horsley Hinton.)

The Amateur Photographer Library. (A shilling series of popular Elementary books of instruction).

- 1 Platinum Toning, by Lyonel Clark.
- 2 Competitive Papers on Photography.
- 3 Experimental Photography, by C. J. Leaper, F.C.S.
- 4 Short Chapters on Art Photography, by H. P. Robinson.
- 5 Development, by Lyonel Clark.
- 6 The Art of Retouching, by J. Hubert.
- 7 Elementary Photography, by John A. Hodges.
- 8 Carbon Printing, by E. J. Wall.
- 9 Wet Collodion, and how to work it, by C. W. Gamble.
- 10 The Lantern, and how to use it, by Goodwin Norton.
- 11 Platinotype Printing, by A. Horsley Hinton.
- 12 Photographer's Note Book and Constant Companion, by Rev. F. C. Lambert.
- 13 Photo-Aquatint, or The Gum-Bichromate Process, by A. Maskell and R. Demachy.
- 14 Animated Photography, by C. M. Hepworth.
- 15 Architectural Photography, by G. A. T. Middleton, A.R.I.B.A.
- 16 Mounts and Frames, by Rev. F. C. Lambert, M.A.
- 17 Practical Pictorial Photography, by A. Horsley Hinton.

Other Photographic Publications and Books of Instruction.

- The Dictionary of Photography, by E. J. Wall, and Thos. Bolas, F.C.S., F.I.C.
- Picture-Making by Photography, by H. P. Robinson.
- One Hundred Photographic Formulæ.
- The Optical Lantern as an Aid in teaching, by C. H. Bothamley, F.C.S.
- The Gelatino-Chloride of Silver Printing-Out Process, by W. E. Woodbury,
- Evening Work for Amateur Photographers, by T. C. Hepworth.
- The Book of the Lantern, by T. C. Hepworth.
- The Lantern-Slide Manual, by John A. Hodges.
- Studies in Photography, by John Andrews, B.A.
- Gothic Architecture (Handbook to), by T. Perkins.
- Photo-Lithography, by George Fritz.
- A Collection of pictures and lantern slides which have won prizes in
"The Amateur Photographer."

Stall No. 44. **THE ENDOLITHIC IVORY CO., LTD.,**
Pomona Buildings, 61½ Fore Street, E.C.

A series of Ivory and Bone address labels, descriptive tablets, and numbered discs for dark slides, lettered by the Endolithic process.

Stall No. 45. **J. E. LOCKYER,**
87 Evelyn Street, Deptford, S.E.

Lockyer's Hydroquinone Developer and other Photographic Preparations.
Chemicals used in Photography.
Lockyer's "Diamond" Camera, "Diamond" plates and accessories.
Lockyer's "Evelyn" Cameras. Nos. I, II, and III.

Stall MESSRS. SAMPSON LOW, MARSTON & CO.

No. 46. St. Dunstan's House, Fetter Lane, E.C.

Fine Art Works by Dr. P. H. Emerson.

Picture of East Anglian Life. Illustrated by means of thirty-two plates in Photogravure and fifteen Text Illustrations. 5 guineas net. Edition de Luxe, 7 guineas net.

Life and Landscape on the Norfolk Broads. By Dr. Emerson and T. F. Goodall. Illustrated with forty Photographs from nature in Platinotype, mostly mounted on Plate Paper. 6 guineas net. Edition de Luxe, 10 guineas net.

Wild Life on a Tidal Water. Thirty Copperplates by Dr. Emerson and T. F. Goodall, with letterpress, a chart of Breydon Water, and a scientific list of Birds shot there. £1 5s. net. Edition de Luxe, 10 guineas net.

**Stall THE MUTOSCOPE AND BIOGRAPH SYNDICATE,
No. 47. LTD.,**

**Piccadilly Buildings, 18 & 19 Great Windmill Street,
Shaftesbury Avenue, London, W.**

Stall No. 48. ROSE & COOP.

**The West End Photo Stores,
Beak Street, Regent Street, London, W.**

Stereoscopic views.

General photographic apparatus and sundries.

Stall No. 49. SMITH'S ACETYLENE CO., LTD.,

44 Blackett Street, Newcastle-on-Tyne.

Smith's Patent Acetylene Generator.

Special portable generators and lamps for photographers.

Various table, wall, carriage and cycle lamps.

Special burners, globes, dark room lamps, and other fittings for use in connection with Acetylene gas.

Drawings of the mechanism of generators and lamps.

Specimens of comparative photographs and prints taken by Acetylene and other lights, drawings of the spectra of various lights, etc., etc.

Stall UNDERWOOD & UNDERWOOD,

No. 50. London and New York.

Original Stereoscopic Views of the World.

Perfecscopes.

Stall THE "PERFECTUS" SENSITIZED PAPER CO.,

No. 51. 60 London Road, Croydon.

Specimens of prints on "Perfectus" Albumenized Sensitized Paper.

Stall
No. 52. GAUTHIER-VILLARS ET FILS,
 Imprimeurs-Éditeurs,
 55 Quai des Grands Augustins, Paris.
 Works on theoretical and applied photography.

Stall THE TURNER MANUFACTURING AND TRADING
No. 53. SYNDICATE, LIMITED,
 157 Whitfield Street, W.

Combined Davenport and Dark Tent. W. T. Preston Turner's
Patent.

When closed this resembles an ordinary Davenport being fitted with spaces for ink and stationery in the usual way, but when opened, by lifting up the top, it is converted into a Dark Tent, fitted with curtains, lead-lined sink, water cistern with tap, tube, and spray, and space for bottles, etc. At back is a Ruby window with fall-down bracket for lamp *outside* (if it is wished to work at night). In the cupboard below the sink is a receptacle for the waste water, holding three times as much as the supply cistern.





The Scientific and Industrial Applications of Photography.

ENGINEERING PHOTOGRAPHY.

- | | |
|--|---|
| <p>1-15 Series of 15 Pictures showing the
Building of the s.s. Campania.</p> <p>16 Puffing Billy, by Col. Stuart Wortley.</p> <p>17 The Rocket, by Col. Stuart Wortley.</p> <p>18 Twelve Photographs, L. & N.W.
Locomotive Works, Crewe.</p> | <p>T. R. Annan & Sons.</p> <p>Mrs. Stuart Wortley.</p> <p>Mrs. Stuart Wortley.</p> <p>F. W. Webb.</p> |
|--|---|
- 1 7 feet eight-wheeled compound express passenger locomotive, "Queen Empress." (F. W. Webb's system.)
 - 2 7 feet four-wheeled coupled compound express passenger locomotive, "Black Prince." (F. W. Webb's system.)
 - 3 4 feet 3 inches eight-wheeled coupled compound goods locomotive. (F. W. Webb's system.)
 - 4 5 feet 6 inches four-wheeled coupled side tank passenger locomotive.
 - 5 5 feet six-wheeled coupled express goods locomotive. (Joy's valve gear.)
 - 6 4 feet 3 inches six-wheeled coupled coal engine.
 - 7 7 feet express compound locomotive, "Teutonic." (F. W. Webb's system.)
 - 8 4 feet 6 inches eight-wheeled side tank passenger locomotive.
 - 9 Photograph taken from the working drawings of the compound locomotive, "Black Prince."
 - 10 Photograph taken from the working drawings of the compound locomotive, "Black Prince."
 - 11 6 feet 6 inches four-wheeled coupled passenger locomotive, "Hardwicke."
 - 12 7 feet 6 inches express passenger locomotive, "Princess Royal."

ASTRONOMICAL PHOTOGRAPHY.

- 1 Eclipse of Sun, 1898, January 22nd. Royal Observatory,
Greenwich.

Positives 12 inches \times 10 inches from Photographs of the Eclipse of the Sun, 1898, January 22nd, at Sahdol, Central India. Taken with the Thompson Coronagraph, object glass 9 inches diameter, 8 feet 6 inches focus, with concave enlarging lens giving an equivalent focus of about 36 feet. Diameter of Sun's image 4 inches.

No. 1. Exposure 1 second. Plate Ilford Ordinary.

No. 2. Exposure 5 seconds. Plate Ilford Special Rapid.

No. 4. Exposure 20 seconds. Plate Rocket.

No. 6. Exposure $\frac{2}{3}$ second. Plate Ilford Ordinary.

The negatives were developed with hydroquinone (diluted half strength).

- 2 Solar Photographs. Royal Observatory, Greenwich.

No. 1. Sun taken with the Dallmeyer Photo-heliograph. 1892, February 13th, 9 h. 47 m. Exposure approximately $\frac{1}{3000}$ th of a second. Thomas' Lantern plates. Hydroquinone development. Largest Sun spot photographed at Greenwich.

No. 2. Sun taken with Thompson's Photo-heliograph, 1893, August 7th, 11 h. 50 m. Exposure approximately $\frac{1}{3000}$ th of a second. The largest total spotted area photographed at Greenwich.

- 3 Four four-inch Solar Photographs, paper prints. The sun at the sun-spot maximum, 1882. Royal Observatory,
Greenwich.

- 4 Six eight-inch Solar Photographs, paper prints. The sun at the sun-spot maximum, 1892-3. Royal Observatory,
Greenwich.

- 5 Photograph of the Partial Solar Eclipse of 1890, June 17th. Royal Observatory,
Greenwich.

Paper print from an Indian photograph, taken under the superintendence of the Surveyor-General. Transmitted through the Solar Physics Committee.

- 6 One twelve-inch Solar Photograph, 1885, July 18th. Royal Observatory,
Greenwich.

Paper print from an Indian photograph, taken under the superintendence of the Surveyor-General. Transmitted through the Solar Physics Committee.

- 7 Four enlargements (five diameters) from four-inch Solar Photographs, paper prints. Royal Observatory,
Greenwich

- 8 Four enlargements ($2\frac{1}{2}$ diameters) from eight-inch Solar Photographs taken at Greenwich. Paper prints. Royal Observatory, Greenwich.
- 9 Photographs of the Dallmeyer Photo-heliograph, and of its central portion, showing the method of giving the exposure. Royal Observatory, Greenwich.
- 10 Two Photographs of the position micrometer used in the measurement of the Solar Photographs. Royal Observatory, Greenwich.
- 11 Photographs of the Moon. Royal Observatory, Greenwich.
 Photographs (12 inches \times 10 inches) of the Moon taken with the 26-inch photographic refractor of the Thompson Equatorial. Focal length 26 feet.
 No. 1. Enlargement from photograph taken at the principal focus, 1897, April 13th. Age of Moon, 11 d. 18 h. Dry Collodion (Hill-Norris) plate.
 No. 2. Positive (12 inches \times 10 inches) of photograph of the Moon, taken with an enlarging lens, giving an equivalent focus of about 108 feet, 1897, May 12th. Age of Moon, 11 d. 1 h. Rocket plate.
 No. 3. Original negative of the Moon, taken with the 30-inch Cassegrain Reflector of the Thompson Equatorial. Dry Collodion plate (Hill-Norris Gazette), 1887, October 7th. Age of Moon, 11 d. 3 h.
 No. 4. Similar negative taken in, 1897, October 17th. Age of Moon, 21 d. 5 h.
- 12 Enlargement of Photograph of Moon. Royal Observatory, Greenwich.
 Taken with enlarging lens at secondary focus, 1897, May 12th. Age of Moon, 11 d. 1 h. Gelatine (Rocket Plate).
- 13 Enlargement of Photograph of Moon. Royal Observatory, Greenwich.
 Taken at principal focus, 1897, April. Age of Moon, 11 d. 18 h. Dry Collodion (Hill-Norris plate).
- 14 Stellar Photographs. Royal Observatory, Greenwich.
 These photographs illustrate the work of the chart of the heavens on which the Royal Observatory, along with 17 other observatories, is engaged. The whole sky is being photographed in duplicate, each plate covering a little more than 4 square degrees. Altogether 22,000 photographs will be required, the complete chart will contain ten million stars. The exposure given to the plates at Greenwich is 40 m. To obtain accurate data for the determination of the positions of the stars in the chart, a second series of photographs with a shorter exposure is taken. The exposures at the Royal Observatory are 6 m., 3 m., and 20 s. With 20 s. 9th magnitude stars are shown, and with 3 m. and 6 m., 11th magnitude. The lines are printed on the plates for convenience of measurement. The photographs are taken with the Astrographic Equatorial of 13 inches aperture, and 11 feet 3 inches focus.

No. 1. Chart plate No. 3,636. Rocket plate. Exposure 40 m. Developed with Eikonogen for 30 m. Shows about 2,700 stars.

No. 2. Catalogue plate No. 3,809, Ilford Special Rapid plate. Exposures, 6 m., 3 m. and 20 s. Developed with Eikonogen for 15 m. The 20 s. exposure shows stars of the 9th magnitude, and 6 m. exposure stars of the 11th magnitude.

No. 3. Transparency of chart plate No. 3,636.

No. 4. Chart plate No. 3,603.

15 Stellar Photographs. Royal Observatory, Greenwich.

I. Bromide Prints from Original Negatives. Pleiades, Exposure 39 m., Positive Print. Prosepe, Exposure 40 m., Positive Print. Chart Plate, Exposure 40 m., Positive Print, R.A. 21 h. 54 m. Declination + 66°. Chart Plate, Exposure 40 m., Positive Print. R.A. 23 h. 40 m. Decl. + 70°.

II. Pleiades, Positive Bromide Enlargement.

III. Prosepe, Positive Bromide Enlargement.

IV. Prosepe, Negative Bromide Enlargement.

V. Duplex Micrometer, for measuring Astrographic plates.

16 Two Photographs of Photographic Telescope made for the Royal College of Science, Poona, by the exhibitors. Thomas Cooke & Sons, Ltd.

In No. 1 the instrument is shown as fixed for photographing the spectrum of the Solar corona during the recent eclipse. Two large prisms 6 in. \times 8 in., with a refracting angle of 45°, are mounted in front of a 6 in. Cook photo-visual O.G. The same combination with a differently arranged camera is used for star spectra. By removing the prisms the instrument is adapted for direct photography, the O.G. covering with good definition to the edges a plate 6½ ins. square. An enlarging (Barlow) lens can also be used upon the instrument satisfactorily. No. 2 shows the alteration when it is desired to use the instrument for visual purposes, the change necessary being merely the substitution of an eye piece for the plate holding arrangement.

17 Three Photographs of equatorially mounted Telescope, for photographic and visual purposes. Thomas Cooke & Sons, Ltd.

These represent an instrument with O.G. of 6 in. aperture similar in most respects to the one depicted in No. 1. It is fitted with time and instantaneous and focal plane shutters, and with an enlarging lens. In No. 5 the instrument is seen with the visual eye end substituted for the camera.

18 Photograph of a smaller sized instrument similar in principle to the last. Thomas Cooke & Sons, Ltd.

19 Lunar Photograph (enlarged). J. A. Forrest.

Taken by John Hartnup, and the exhibitor on February 12th, 1854.

20 Astronomical Observations. Royal Astronomical Society.

(a) Portion of Moon; Hyginus-Albategnius. Photographed by Messrs. Loewy and Puiseux, Paris Observatory, March 15, 1894.



SPECIMEN OF
THREE COLOUR PROCESS.

ARTHUR COX ILLUSTRATING CO.,
17, BENNETT'S HILL,
BIRMINGHAM.

- (b) Total Solar Eclipse, April 16, 1893. Photographed by Professor J. M. Schaeberle, Mina Bronces, Chili. (Lick Observatory Party.)
- (c) Portion of Moon; Alps and Apennines. Photographed by MM. Loewy and Puiseux, Paris Observatory, February 13, 1894.
- 21 Astronomical Photographs, by Professor E. E. Barnard. Royal Astronomical Society.
 (a) Comet of 1892-3 (Holmes), and Nebula in Andromeda, November, 10, 1892.
 (b and c) Photograph of the Milky Way.
 (d) Comet a, 1892, I. (Swift), April 7, 1892.
- 22 Astronomical Photographs. Royal Astronomical Society.
 (a) Cluster M13 (Hercules). Photographed by Mr. W. E. Wilson, August 5, 1894.
 (b) Jupiter. Photographed at the Lick Observatory, by Professor E. E. Barnard, September 26, 1892.
- 23 Comet e, 1893-4. (Brooks.) Royal Astronomical Society.
 October 20, 21, 22, and November 18, 1893. Photographed at the Lick Observatory by Professor E. E. Barnard.
- 24 Solar Eclipses. Royal Astronomical Society.
 Series of 12 transparencies enlarged from negatives of the total solar eclipses of December, 1871; April, 1875; July, 1878; May, 1882; May, 1883; September, 1885; August, 1886; August, 1887; January, 1889; December, 1889, April, 1893. (Photographs taken in Brazil and West Africa.)
- 25 Solar Eclipse. Col. J. Waterhouse, I.S.C.
 Photograph of the total eclipse, January 22nd, 1898. Taken by Mr. T. A. Pope, Assistant-Surveyor-General of India.
- 26 Solar Eclipse. Col. J. Waterhouse, I.S.C.
 Transparency of the total solar eclipse, 2nd December, 1871, taken at Oadabitta, by Mr. J. B. M. Humphrey and Col. Waterhouse.
- 27 The same Eclipse as in 26. Col. J. Waterhouse, I.S.C.
 Taken in Java, by C. Dietrich.
- 28 Annular Solar Eclipse. Col. J. Waterhouse, I.S.C.
 Photographs taken June 17th, 1890, at Bhagulpur, India.
- 29 Frame containing Twelve of the Original R. & J. Beck.
 Negatives of the Moon, by De La Rue.
- 30 Nebula of Orion. A. A. Common.
 Large carbon enlargement from negative taken January, 7th, 1883.
- 31 Stars round Altair. A. A. Common.
 Carbon print. Negative taken, September, 1883.
- 32 Stars in Orion. A. A. Common.
 Carbon print. Negative taken, December, 1883.

- 33 The Pleiades. A. A. Common.
Carbon print. Negative taken, January, 1884.
- 34 Stand shewing the Orion Nebula. A. A. Common.
- 35 Stand containing early planetary, comet, lunar, A. A. Common.
and nebula photographs.
- 36 Astronomical Photographs. Dr. David Gill.
- 1 (a) Photograph of the Apparatus with which the plates of the Cape
Photographic Star-survey of the Southern heavens were taken.
(The complete star-catalogue derived from these plates contains
the places and magnitudes of 450,000 stars.)
 - (b) Photograph of the Cape Astro-photographic Telescope.
 - 2 (a) Catalogue plate. International Series. Three exposures, viz.:
6 m., 3 m. and 20 s. Bromide print enlarged two diameters.
 - (b) Ditto ditto Positive on glass.
 - 3 (a) Chart plate. International Series. Single exposure, 43 m., bromide
print.
 - (b) Ditto ditto Positive on glass.
 - 4 (a) Chart plate. International Series. Triple exposure, 30 m. each,
bromide print.
 - (b) Ditto ditto Positive on glass.
 - 5 (a) A portion of the Nubecula Major Single exposure of 2 h. 47 m.
 - (b) Ditto ditto Positive on glass.
 - 6 Area about η *Argûs*.
Bromide—
 - (a) Exposure 5 m.
 - (b) Ditto 45 m.
 - (c) Ditto 3 h. 12 m.)
 - (d) Ditto 12 h.
 - (e). Same 'as c in a different scale,
position on glass.
 - (a) Cluster, ω *Centauri*, on Glass.
 - (b) α *Centauri*. Exposures and trail of same, on glass.

SPECTROSCOPIC PHOTOGRAPHY.

- 1 Comparative Photographic Spectra of Frank McClean, M.A.
the High and Low Sun from (H)
o (A), November 1890.
- 2 Comparative Photographic Spectra of Frank McClean, M.A.
the Sun, Iron and the Platinum
Group of Metals; also of the Sun
and the Iron Group of Metals from
W. L. 3800 to W. L. 5700. No-
vember 1891.
- 3 Spectrum of Iron. (By Rowland's Grating J. William Gifford.
and Quartz-Calcite Lenses.)

- 4 Frame of Photographs of Star Rev. W. Sidgreaves, S.J., F.R.S.
Spectra.
- 1 Spectrum of a Tauri. Direct enlargement from a negative on an Edwards' Isochromatic plate, showing the effect of correction for the colour sensibility curve of the plate, by a method of screening the negative during the enlarging exposure.
 - 1 and 2, without screen; 3 with screen.
- The screen is the reverse or positive of the continuous spectrum of the star, as near as can be obtained from an isochromatic negative by a gas flame, shaded part of the time of exposure by a blue glass. Each star requires its own screen, and a denser negative requires a denser screen. This method of screening has only been developed during the process of preparing these exhibits. They are consequently not all perfect.
- 2 Spectrum of the variable star α Ceti—1 As a yellow star, November 29th, 1897. 2 As a red star, December 19th, 1897.
 - 3 Progressive stellar spectra between Secchi's 3rd and 2nd types.
- 5 Parts of the Solar Spectrum, by a Rev. W. Sidgreaves,
Rowland Plane Grating. S.J., F.R.A.S.
- 1 The strong calcium absorptions at H and K, with double reversals near a solar spot.
 - 2 The same calcium absorptions on a smaller scale, to show the groups of lines in their neighbourhood.
 - 3 Solar spot spectrum, in the green.
 - 4 The magnesium group b, showing b₃ and b₄ doubles.
- 6 Specimens of spectrum photo- Capt. W. de W. Abney, C.B.
graphs taken of the infra-red
of the spectrum.
- 7 Absorption spectra of colourless Capt. W. de W. Abney, C.B.
liquids.
- 8 Solar spectrum Col. J. Waterhouse, I.S.C.
- Rowland's chart of the solar spectrum taken with a diffraction grating in nine sections.

PHOTO-CHEMICAL LABORATORY, ROYAL TECHNICAL COLLEGE,

Berlin—Charlottenburg.

- 9 Spectrum taken on a daguerreotype plate, by Professor Karsten Kiel.
- 10 Spectra of substances containing carbon, by H. W. Vogel.
- 11 Solar spectra, by Dr. Schultz-Sellack.
Plates prepared with chloride, bromide and iodide of silver.
- 12 Spectra of selenium, hydrogen, carbonic oxide and carbon, by
H. W. Vogel and E. Vogel.

- 13 Spectra of oxygen and hydrogen, by H. W. Vogel.
- 14 Diffraction spectra of the arc light and iron, by E. Vogel.
- 15 Spectrum of hydrogen, by H. W. Vogel.

-
- 16 Normal Solar Spectrum.

George Higgs.

GEOLOGICAL PHOTOGRAPHY.

This includes for convenience of classification both photographs taken as geological records, and other subterranean photographs.

- 1 Geological Photographs Committee, British Association
for the Advancement of Science.

Sec. Prof. W. W. Watts, M.A., Sec. G.S.

- 1 Calcareous Grits on Clay, Gristhorpe Cliff, Oxford.
- 2 False-bedding in Sandstone. Trias, Hilbre Island, Cheshire.
- 3 Sandstone, The Sphinx, Egypt.
- 4 Trees in submerged forest, Leasowe, Cheshire.
- 5 Tree in Coal-measures, Partick, Glasgow.
- 6 Raised beach, on Devonian rocks, Hope's Nose, Torquay.
- 7 Submerged Forest, Leasowe shore, Cheshire.
- 8 Overfolding in ancient quartzite, Minaun Head, Achill.
- 9 Fold, with middle limb pinched out, Mulroy Bay, Donegal.
- 10 Carboniferous Limestone, near Grange, Lancashire.
- 11 Magnesian Limestone on Millstone grit, Knaresborough.
- 12 Cretaceous conglomerate on Trias, Murlough Bay, Antrim.
- 13 Pot-hole in stream, Glenariff, Antrim.
- 14 Pot-hole in stream, Rumbling Bridge, Dunkeld.
- 15 Icicles, showing line of springs, Shirenewton, Monmouth.
- 16 Wind Action on Millstone Grit, Brimham Rocks, Harrogate.
- 17 Action of Rain, Alltdearg Burn, Fochabers, Elgin. Earth Pillars in Old Red Sandstone Conglomerate.
- 18 Roche Moutonnée, Capel Curig, Carnarvon.
- 19 Glaciated Rocks, Cwm Glas, Snowdon.
- 20 Boulder on Glaciated Surface, Cwm Tryfaen, Carnarvon.
- 21 Erratic of Mourne Granite, Cloughmore, Rostrevor, Down.
- 22 Characteristic denudation of Boulder Clay, Filey.
- 23 Sixty Years' Denudation, Marino, Holywood, Down.
- 24 House Wrecked by Landslip.
- 25 Floor of House Fractured by Landslip.
- 26 Veins of Granite in Slate, Foel Tan-y-Grisiau, Merioneth.
- 27 Laccolite of Dolerite, Fair Head, Antrim.
- 28 Dolerite Dyke cutting through Chalk, and including patches of it, Squire's Hill, Antrim.
- 29 Columnar Structure, Giant's Causeway, Giant's Fan.
- 30 Radiating Columns, The Spindle Rock, St. Andrews.
- 31 Escarpments of Millstone Grit, The Roches, Staffs.

- 32 Escarpments of Millstone Grit, The Roches, Staffs.
- 33 Joints Governing Denudation, and forming caves, Criccieth.
- 34 Boulder resting on denuded Limestone pedestal, Norber.
- 35 Drift-filled Valley, in Chalk, now being re-excavated by the Sea, Flamborough.
- 36 Drift-filled Valley in Skiddaw Slate, being re-excavated by Stream of Glen Wyllin, Isle of Man.
- 37 Dry Valleys in Mountain Limestone, Malham and Gordale.
- 38 Dry Valleys in Mountain Limestone. Dry Waterfall.
- 39 Carboniferous Limestone, Cheddar, Somerset.
- 40 Chalk Cliff, The "Giant's Head," Portrush.
- 41 Kitchen Midden, Roundstone, Galway.

2 Subterranean Photographs. Herbert W. Hughes.

Taken underground, by burning magnesium in the oxy-hydrogen flame. The method and apparatus used have been fully described in "The Photographic Journal," Vol. XVIII., pp. 93-101.

- 1 Undercutting Coal in the Bottom of the Seam.
- 2 Building a Timber Cog.
- 3 Setting Short Timber Props.
- 4 Junction on Endless Rope Haulage Road.

3 A vast excavation deep down in a Festiniog Slate J. C. Burrow.
Mine. 3 guineas.

4 Far from the light of day, in a Cornish Tin J. C. Burrow.
Mine. 3 guineas.

5 The bottom of a Cornish Mine Shaft. 3 guineas. J. C. Burrow.
Angle 45°, depth 2,550 feet, temperature 105°, water everywhere.

6 Miners at work half a mile below the surface in J. C. Burrow.
Dolcoath Tin Mine, Cornwall. 3 guineas.

7 Bath Stone Firm's Quarries, Wilts. W. J. Bishop.
Three photographs taken by magnesium light.
Picking.
Making side-cut.
Raising block.

8 Geological Photographs. W. Jerome Harrison.

- 1 St. Non's Arch, St. David's, Pembrokeshire (showing junction of Cambrian with Pre-Cambrian strata.) 1½ guineas
- 2 Whitby. The East Cliff. (Showing junction of Lias and Oolite.) 1½ guineas
- 3 Section near Ogof Golchfa, St. David's, Pembrokeshire, illustrating the phenomenon known as "the Creep of the Hill." The rocks are Cambrian slates. 1½ guineas

9 Earth Pyramid, Austrian Tyrol. (Silver.)

Sydney Keith.

(See also in Historical Section the print by Alfrea Brothers, of the Blue John Mine).

Building a Timber Cog.—HERBERT W. HUGHES.

METEOROLOGICAL PHOTOGRAPHY.

- | | | |
|---|--|-------------------------------|
| 1 | Lightning Flash, June 28th, 1892. | George Corden, F.R.M.S. |
| | Bromide enlargement. | |
| 2 | Lightning Flash, June 28th, 1892. | George Corden, F.R.M.S. |
| 3 | Lightning Flash, July 6th, 1894. | George Corden, F.R.M.S. |
| | Bromide enlargement. | |
| 4 | Lightning Flash, September 29th, 1897. | George Corden, F.R.M.S. |
| | Bromide enlargement. | |
| 5 | Flash of Ribbon Lightning, Bath, August, 22nd, 1895. | W. J. Bishop. |
| | 1.35 a.m. | |
| 6 | Lightning Flash, June 6th, 1889. | Royal Observatory, Greenwich. |
| 7 | A Series of Photographs of Lightning. | E. Sanger Shepherd. |

MISCELLANEOUS.

- 1 Stereoscopic Photographs of J. Mackenzie Davidson, M.B., C.M.
Blackburn's Pendulum.
- 2 Stereoscopic Photographs of J. Mackenzie Davidson, M.B., C.M.
Electric Discharges.
- 3 A Frame of Chrono-Photographs obtained with Albert Londe.
the Chronophotographic Apparatus, invented
by the Exhibitor.
- 4 Photographs of Professor C. V. Boy's Messrs. Newton & Co.
Flying Bullets.
 - 1 Martini-Henry Bullet, travelling 1,926 feet per second.
 - 2 Magazine Rifle Bullet, travelling 2,000 feet per second.
 - 3 Bullet passing through ether vapour and carbonic acid gas.
 - 4 Reflection of air waves caused by bullet from flat surfaces.
 - 5 Martini-Henry Bullet travelling 1,926 feet per second, disturbed by
reflections of air waves from flat surfaces.
 - 6 Shot Schulz, No. 8, Right Barrel showing air waves and wad.
 - 7 Magazine Rifle Bullet striking sheet of plate glass, showing back splash
of glass dust.
 - 8 Bullet passing through plate glass.
 - 9 Bullet after passing through plate glass, surrounded by glass dust, plate
beginning to break up.
 - 10 Bullet clear from glass dust. Air waves caused by glass dust, and by
piece of glass punched out by bullet.

X-RAY PHOTOGRAPHY.

- 1 A collection of Crookes' Tubes for X-Ray A. W. Isenthal.
work old and new.
- 2 Crookes' Tubes for Rontgen J. Mackenzie Davidson, M.B., C.M.
Ray work, old and new.
- 3 Pinhole Photographs of the J. Mackenzie Davidson, M.B., C.M.
anode of various Crookes' tubes.
- 4 Six Stereoscopic Skiagrams. J. Mackenzie Davidson, M.B., C.M.
These are mounted in Wheatstone Stereoscopes on the table so as to show
the relief.
- 5 Various Skiagrams. J. Mackenzie Davidson, M.B., C.M.
- 6 Enlarged photographs of the J. Mackenzie Davidson, M.B., C.M.
exhibitor's X-Ray localiz-
ing apparatus.

J. H. Gladstone, D. Sc., F.RS., and W. Hibbert.

- 7 A Series of Photographs, showing the relative absorption of X-Rays by various substances.
- 1 Copper and its oxides.
 - 2 Red oxide and magnetic oxide of iron.
 - 3 Acetates and formates of potassium and calcium.
 - 4 Lithium chloride, bromide and iodide.
 - 5 Metallic calcium, potassium, sodium and lithium.
 - 6 Metallic aluminium, calcium, potassium and sodium.
 - 7 Carbon and some hydrocarbons.
- 8 Chest and ribs of child. Wilson Noble.
- 9 Hands of children, showing growth and epiphyses. Wilson Noble.
- 10 Fractured Patella. Wilson Noble.
- 11 Rat. Wilson Noble.
- 12 Hare. Wilson Noble.
- 13 Sheep. Wilson Noble.
- 14 Skull of a Mummy. Albert Londe.
- 15 Skull of a Patient, with revolver cartridge. Albert Londe.
- 16 Arm with complete disappearance of the Carpal Bone. Albert Londe.
- 17 Foot of a Mummy. Albert Londe.
- 18 Hand with Revolver Bullet. Albert Londe.
- 19 Dog, which has swallowed a nail. The nail has stopped in the esophagus. Albert Londe.
- 20 Various Shell-Fish. Albert Londe.
- 21 Normal Bone and Pathological Bone (Paggett's Disease). Albert Londe.
- 22 Bruised Hand, taken through the Dressing. Albert Londe.
- 23 Abnormal Hand. Albert Londe.
- 24 Photographs, illustrating the application of the Rontgen Rays to the study of Natural History. The Fauna of the British Seas. R. Norris Wolfenden, M.D., Cantab.

FISHES.

- | | |
|-----------------|----------------|
| 1 The Flounder. | 3 The Cod. |
| 2 The Haddock. | 4 The Whiting. |

CRUSTACEANS.

- | | | | |
|----|-------------------------|----|------------------------|
| 5 | The Lobster. | 7b | Hermit Crabs. |
| 6 | The Crab. | 7c | Hermit Crab in sponge. |
| 7 | The Norwegian Crayfish. | 7d | Portunus. |
| 7a | Spider Crabs. | | |

STAR FISHES.

- 8 *Luidia Ciliaris*, young specimen.
- 9 *Luidia Ciliaris*, mature specimen.
- 10 *Henricia Sanguinolenta*.
- 11 *Palmipes placenta*.
- 12 *Asterias Rubens*.
- 13 *Asterias Murrayi*, a very rare star-fish.
- 14 *Solaster Papposa*, and *Comatula*.
- 15 *Porania pulvillus*.
- 16 *Astropecten irregularis*.
- 17 *Astropecten irregularis*, the animal having swallowed a number of small molluscs.
- 18 The sea urchin, showing the lantern of Aristotle.
- 19 The sea urchin, showing the water vascular system.
- 20 *Spatangus* (showing the intestines) and *Cribella*.
- 21 *Echinocardium pinnatifidum* (showing the intestines).
- 22 *Ophiocoma* (the sand star).
- 23 Ophiurids.

FOREIGN STAR FISH.

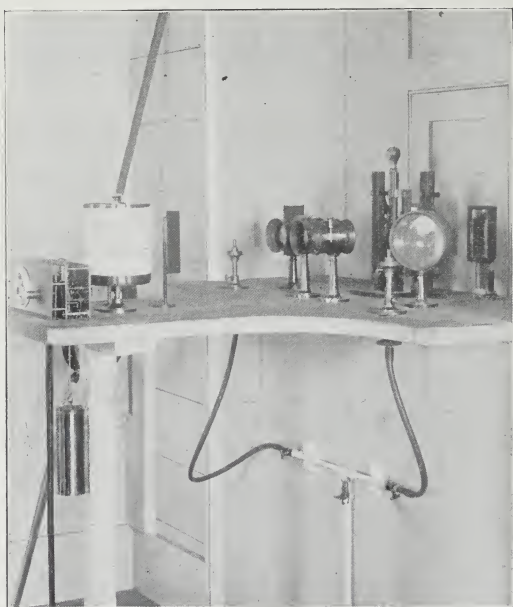
- 24 *Hippasterias phrygiana*.
 - 25 *Goniodiscus granuliformis*.
 - 26 *Goniodiscus placenta*.
 - 27 *Calliaster childreni*.
 - 28 *Paulia horrida*.
 - 29 *Culcita coriacea*.
 - 30 *Pentagonaster pulchella*.
 - 31 *Astropecten polycanthus*. The animal has swallowed a large shell.
-
- 32 Holothuroidea. The sea cucumber.
 - 33 Worms.
 - 34 Shells. *Turritella*, etc.
 - 35 The Scallop.

SPONGES.

- 36 The Glass Sponge.
 - 37 The Common Sponge.
- | | |
|--|--|
| <ul style="list-style-type: none"> 25 Rontgen Photographs, Illustrating
"Skiametry," or Shadow measuring. 26 Radiograph of a Child's Foot, by
Wilson Noble, Esq. 27 Five Frames showing the application of
Photography to Medical Purposes. | <ul style="list-style-type: none"> Griffith C. Wilkin. Royal Photographic Society. John Fallows, M.D. |
|--|--|

PHOTOGRAPHIC RECORDING INSTRUMENTS.

- 1 Comparative records of Declinations, Horizontal Force and Vertical Force Magnetographs during the Magnetic Disturbance of 1806, May 2-3. Royal Observatory, Greenwich.
- 2 Registers of Thomson's Electrograph (1897, February 29; March 1; April 7-8; and April 27-28. Royal Observatory, Greenwich.



The Thermograph at Kew.

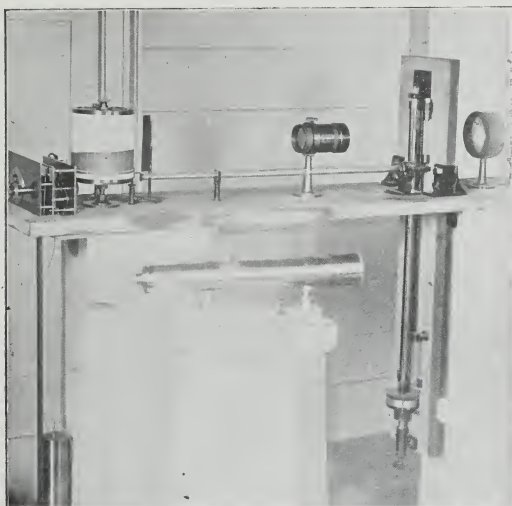
- 3 Records of Earth Currents on two circuits, 1897, October 5-6. Royal Observatory, Greenwich.
Showing abnormal disturbances caused by the running of trains on the South London (Electric) Railway.
- 4 Register of New Thermograph, 1897, June 23-29. Royal Observatory, Greenwich.

- 5 Curves of magnetic declination, electrical potential of the air, temperature (dry and wet bulbs) and Barometric pressure, from self-recording instruments.

Kew Observatory Committee of the Royal Society.

- 6 Simultaneous Photographs for trigonometrical determination of the height and motion of clouds; also solar photographs showing sun spots.

Kew Observatory Committee of the Royal Society.

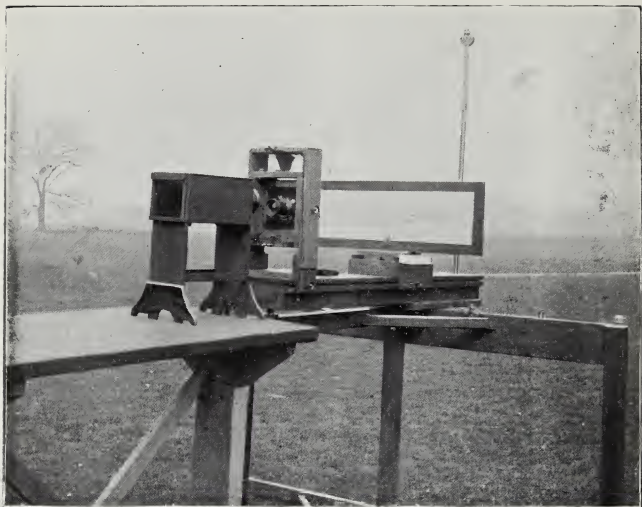


The Barograph at Kew.

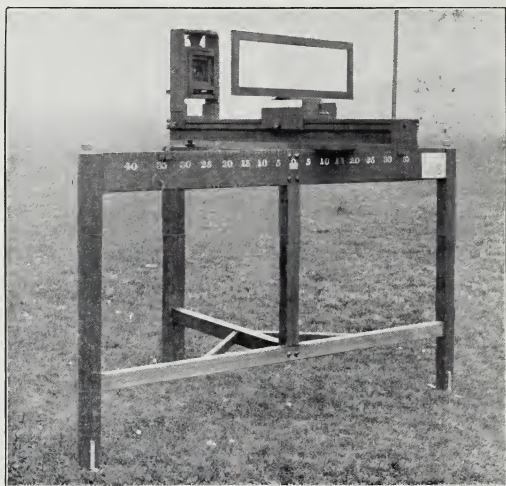
- 7 Photographs of instruments for the continuous registration of —
(1) Air temperature. (2) Barometric pressure.

Kew Observatory Committee of the Royal Society.

- 1 Thermograph Curves show the temperature of dry and wet bulbs, giving separate traces one above the other on the paper wound round the cylinder. For each trace there is a separate gas jet with its condensing lens. The beams of light are reflected from a mirror in the extreme background through the stems of the two thermometers. The cylinder is turned by a clock, which also interrupts the reflected beams at intervals of 2 hours by actuating a stop shown close in front of the cylinder.



Kew Lens Testing Apparatus.



Kew Lens Testing Apparatus.

- 2 Barograph Curve on the cylinder has been developed and written up.
The width of trace is determined by the interval between a fixed stop and the top of the mercury column in the barometer shown on the right. The cylinder is turned by clockwork, and the time marked by a stop as in the case of the Thermograph.

8 Daguerreotype.

Kew Observatory Committee of the Royal Society.

The earliest type of continuous registration in use at Kew Observatory.

9 Photographs shewing the parts of the lens testing apparatus in use at Kew Observatory.

Kew Observatory Committee of the Royal Society.

- 1 On extreme left is auxiliary collimating lens used for making beam of light, e.g. from test object, parallel. Next comes the lens under trial, mounted in a holder which allows of motion round either a vertical or a horizontal axis. The rectangular sheet of ground glass to the right of the lens can be moved backwards and forwards on a swinging beam until the object viewed through the lens is focussed on it. The lens holder is also capable of being racked in and out, so as to bring the nodal point of the lens for emergent rays into coincidence with the vertical axis about which the apparatus turns.
 - 2 Same apparatus as in 1, showing lens and its holder tilted about the horizontal axis.
 3. Same apparatus as in 1 and 2, viewed from other side. The prominent horizontal scale is used to mark the angle through which the swinging beam and the attached lens holder, ground glass plate, &c., have been turned round the fixed vertical axis.
- ## 10 Negatives of Test Objects.
- Kew Observatory Committee of the Royal Society.
Used for testing definition of lenses, showing the falling off of stop.
-

ZOOLOGICAL & BOTANICAL PHOTOGRAPHY.

- | | |
|--------------------------------------|-----------------|
| 1 Gannet sitting on nest. 2 guineas. | Cherry Kearton. |
| 2 Wren entering her nest. 2 guineas. | Cherry Kearton. |
| 3 Blackbird on her nest. 2 guineas. | Cherry Kearton. |
| 4 Cliff Photography. 2 guineas. | Cherry Kearton. |
| 5 Kingfisher. 2 guineas. | Cherry Kearton. |
| 6 Kittiwakes at rest. 2 guineas. | Cherry Kearton. |
| 7 Adder sunning himself. 2 guineas. | Cherry Kearton. |

- | | | |
|----|--|-----------------|
| 8 | Puffins on a rock. 2 guineas. | Cherry Kearton. |
| 9 | Pheasant on nest. 2 guineas. | Cherry Kearton. |
| 10 | Eider Duck sitting on nest. 2 guineas. | Cherry Kearton. |
| 11 | Flashlight Photograph of a Moth on Tree.
2 guineas. | Cherry Kearton. |
| 12 | Photographs of Wild Birds, taken from life, in
their Natural Haunts. By Exhibitor.
(Carbon.)
Guillemets on Pinnacles. Farne, 3 June, 1881.
Gannet and Young. Bass, 27 July, 1882.
Gannet on Nest. Bass, 27 July, 1882.
Group of Gannets. Bass, 8 June, 1882.
Eider Duck, May Island, 19 June, 1884.
Golden Eagles' Nest and Young, 1 July, 1886. | William Green. |
| 13 | Bird Photographs, from Life. | R. B. Lodge. |
- 1 Nightingale (*Daulius luscina*).
 - 2 Reed Warbler (*Acrocephalus streperus*).
 - 3 Great Reed Warbler (*Acrocephalus turdoides*).
 - 4 Sedge Warbler (*Acrocephalus phragmitis*).
 - 5 Black Cap (*Sylvia atricapilla*).
 - 6 Willow Wren (*Phylloscopus trochilus*).
 - 7 Whinchat (*Pratincola rubetra*).
 - 8 Spotted flycatcher (*Muscicapa grisola*).
 - 9 Chaffinch (*Fringilla cælebs*).
 - 10 Rook (*Corvus frugilegus*).
 - 11 Barn Owl (*Stryx flammea*).
 - 12 Short-eared owl (*Asio accipitrinus*).
 - 13 Goshawk, (*Astur palumbarius*).
 - 14 Sparrow Hawk (*accipiter nisus*).
 - 15 Kite (*Milvus regalis*).
 - 16 Black Kite (*Milvus migrans*).
 - 17 Cormorant (*Phalacrocorax Carbo*).
 - 18 Heron (*Ardea cinerea*).
 - 19 Purple Heron (*Ardea purpurea*).
 - 20 Little Egret (*Ardea garzetta*).
 - 21 Buff-backed heron (*Ardea butulcus*).
 - 22 Night Heron (*Nyctocorax griseus*).
 - 23 White Stork (*Ciconia alba*).
 - 24 Glossy Ibis (*Plegadis falcinellus*).
 - 25 Spoonbill (*Platalea leucorodia*).
 - 26 Eider Duck (*Somateria mollissima*).
 - 27 Dunlins (*Tringa alpina*).
 - 28 Black Tern (*hydrochelidon nigra*).
 - 29 Whiskered Tern (*hydrochelidon hybrida*).
 - 30 Lesser black-backed Gull (*Larus fuscus*).
 - 31 Black-headed Gull (*Larus ridibundus*).
 - 32 Kittiwake (*Rissa tridactyla*).

- 33 Guillemots (*Uria troile*).
 - 34 Puffin (*Fratercula arctica*).
 - 35 Little Grebe (*Podiceps fluvialis*).
 - 36 Black-winged Stilt (*Himantopus candidus*).
 - 37 Garden Warbler (*Sylvia hortensis*).
 - 38 Avocet (*Recurvirostra avocetta*).
- 15s. each frame. 15 guineas per series.

N.B.— Other exhibits of zoological interest will be found amongst the X-ray photographs.

W. SAVILLE-KENT, F.L.S., F.Z.S.,
3 Beddington Gardens, Wallington, Surrey.

Duplicates of these pictures can be ordered from the Exhibition Secretary at the following prices:—

- Bromide enlargements, plainly mounted, 10/6 each.*
- Silver Prints, whole plate, 2/6 each, unmounted.*
- Smaller size, 1/- each, unmounted.*

- 1 Series of nine Prints, Illustrating Coral growths in the Australian Great Barrier Reef, and in the vicinity of Torres Straits.

These views were taken by the exhibitor on occasions of exceptionally low tides. Under ordinary conditions, these coral growths are covered by the sea to a depth of several fathoms.

- 2 Australian Coral Reef views, as above, Series II. Nine prints.
- 3 Australian Coral Reef views, as above, Series III. Nine prints.
- 4 Selected Coral Specimens from the Australian Great Barrier Reef, Nine prints.
- 5 Individual Coral Specimens, slightly enlarged, by direct Negatives. illustrating their more minute structure. Nine prints.

- 6 Marine Organisms. Series I. Nine prints.

Coral animals (polyps), sea-anemones, and other Australian marine organisms, photographed through the water from life, with the aid of the exhibitor's special stand. No. 5, the most noteworthy example, represents a giant sea anemone (*Discosoma*), often 18 inches or more in diameter; it is commonly associated with the peculiar attendant or "commensal" fishes *Amphiprion*, and a species of crab as here shown in situ.

- 7 Marine Organisms. Series II. Nine prints.

Australian marine organisms, photographed vertically through the water from life. Including sea anemones, jelly fish, sea worms (*Sabellae*, *Beche-de-mer*), etc. No. 5 is a vertical snapshot taken of a brood of newly-hatched turtles enjoying their first swim in a basin of sea water.

- 8 Australian Indigenous Fishes. Series I. Nine prints.
- 9 Australian Indigenous Fishes. Series II. Nine prints.

- 10 Australian Pearls and Mother-of-Pearl Shells, by which Pearls are produced. Ten prints.

Notable subjects. No. 2, pearl artificially produced by an operation by the exhibitor on a living mother-of-pearl shell. No. 5, the famous "Southern Cross" pearl, consisting of a congeries of nine pearls naturally united in the form of a cross, upon which a value of £10,000 was originally placed.

- 11 Australian Fern Owls, or Goat Suckers (*Podargus-strigoides*).

Popularly known in Australia as the "Morepork." Series I. Twelve prints. The upwards of seventy figures included in this and the three following frames were all taken by the exhibitor from a single pair of birds. They serve well to illustrate the remarkable versatility of aspect and expression that the species is capable of presenting under varied emotional conditions. No. 6, illustrating contraction and attenuation in protective imitation of the branch on which it is perched, and No. 7 of the same series, in which the bird is defiantly excited and puffed up, represent the more extreme aspects that may be presented by the same individual.

- 12 Australian Fern Owls. Series II. Twenty prints.

- 13 Australian Fern Owls. Series III. Twenty prints.

- 14 Australian Fern Owls, etc. Series IV. Twenty prints.

- 15 Lizards, Photographed from Life. Series I. Eighteen prints.

Illustrating the most characteristic aspects and attitudes of the Australian Frilled lizard; a species notable for its remarkable erectile frill, and for its habit of running erect on its hind legs, as shown in prints Nos. 1 to 5.

- 16 Lizards, Photographed from Life, Series II. Twelve prints.

Illustrating the aspects and attitudes of the European Chameleon (*Chameleo vulgaris*). The manner in which flies are captured by the rapid protrusion of the long extensile tongue is shown in prints Nos. 4 and 7. Nos. 1 and 3 illustrate characteristic sleeping attitudes taken at night by flash light. No. 11, illustrating the chameleons skeletal structure, is a skiagraph obtained by the exhibitor with the assistance of Mr. Ed. Brown, of Wallington.

- 17 Lizards, Photographed from Life. Series III. Fifteen prints.

Illustrating Indian, African, and Australian Geckos. Notable for their chiefly nocturnal habits, lidless eyes, and the sucker-like modification of their feet, which enables them to walk like flies on walls, ceilings, or window panes. The phenomenon of tail reproduction, which shortly follows the frequent loss of the original member, is illustrated by Nos. 11. and 15, in which new tails may be observed to be making bud-like growths.

- 18 Lizards, photographed from Life. Series IV. Eleven prints.

Illustrating the aspects and attitudes of the Australian Spinous lizard (*Moloch horridus*), popularly known as the "Mountain Devil." It inhabits the sandy wastes of Central and Western Australia, and feeds exclusively upon small species of ants. Nos. 7 and 8 represent several individuals photographed by the exhibitor, while industriously feeding at an ant track.

- 19 Lizards, Photographed from Life. Series V. Thirteen prints.

Illustrating characteristic aspects and attitudes of the Californian Horned Lizard (*Phrynosoma cornutum*), and the Australian Spine-Tailed Lizards (*Egernia Stokesii* and *E. depressa*).

- 20 Lizards, Photographed from Life. Series VI. Fourteen prints.

Illustrating various Australian members of the Skink family, notably the Stump-Tailed and Blue-Tongued Lizards (*Trachysaurus rugosus*, and *Cyclodus gigas*). Also the New Zealand Tuatera Lizard (*Sphenodon punctatus*), and the Australian monitor (*Varanus varius*). No. 7 represents an example of the Blue-Tongued Lizard, with twelve vivipariously produced young, in the possession of the exhibitor. A snapshot of the interesting family, gathered around a saucer of water, is reproduced in No. 11.

- 21 Lizards, Photographed from Life. Series VII. Twenty prints.

Illustrating chiefly the Australian Water Lizard (*Physignathus leseuri*), the Jew, or Bearded Lizard (*Amphibolurus barbatus*), and the Tree Lizard (*Amphibolurus muricatus*). The faculty discovered by the exhibitor to be possessed by the Australian Water and Tree Lizards to run erect on their hind legs, after the manner of the Frilled Lizard, is illustrated by the instantaneous photographs Nos. 9 and 10. The peculiar sleeping attitude of the young Bearded Lizard, taken by flash light, is shown in No. 11. Nos. 1 and 16 represent examples of the Banded Iguana (*Brachylophus fasciatus*), a rare species from the Fiji Islands, in the exhibitor's collection.

- 22 Miscellaneous Zoological Subjects from life, chiefly Australian.

Series I. Twelve prints.

Nos. 1, 7, and 8, Australian Flying Opossums or Phalangiers (*Petaurus breviceps*, and *Petauroides volans*). No. 2, Australian Flying Fox, or Fruit Bat (*Pteropus* sp.). No. 3, Australian Laughing Kingfisher (*Dacelo leachii*). Nos. 4 and 5, Australian Native Bear, or Koala (*Phascolarctos cinereus*). No. 6, Young Australian Osprey (*Pandion leucocephalus*). Nos. 9 to 12, Young Australian Pelicans (*Pelicanus conspicillatus*).

- 23 Miscellaneous Zoological Subjects from Life. Series II. Ten prints.

Nos. 1 and 3, Australian Butterflies (*Pieris* sp.), newly-emerged from their chrysalides. No. 2, Western Australian native on raft. No. 4, Young Pelicans. Nos. 5 to 7, European Eagle Owls (*Bubo ignavus*). No. 8, Australian Caterpillars. Nos. 9 and 11, White Plumed Moths (*Pterophorus pentadactylus*), enlarged by direct negatives. No. 10, Native dance, or "Corroboree," of Western Australian aboriginals.

- 24 Tropical Australian White Ants (Termites), and their Characteristic Nest-Mounds or Termitaria. Nine prints.

No. 2, from life, illustrating a colony of the most destructive wood-eating species (*Eutermes* sp.). No. 3, a nest mound, which had been experimentally bisected, illustrating the progress made towards its reconstruction within twelve months.

- 25 Spiders and Spiders' Webs. Eleven prints.

Illustrating some characteristic Australian spiders, also spiders' webs (British) laden respectively with dew and hoar frost. Nos. 4 and 8, web or

snare of the Australian spider (*Argiope regalis*); the centre of which is strengthened by a ribbon-like thickening in the form of the letter x.

26 Botanical Subjects, chiefly Australian. Series I. Ten prints.

Illustrating Australian grass trees (*Xanthorrhaceæ*); Baobab, or Bottle tree (*Adansonia rupestris*); Indigenous Water-lilies (*Nympheaceæ*); Fringed Violets (genus *Thysanotus*).

27 Botanical Subjects. Series II. Nine prints.

Illustrating Australian acclimatised flowering shrubs. *Plumiera Franciscea* and *Beaumontia*, and Water Hyacinth (*Pontideria crassipes*); Indigenous water-lilies (*Nyphæa* sp.); Bird pea (*Crotalaria Cunninghamii*); Mangroves (*Rhizophora* and *Avicennia*); and Roley-poley grass (*Spinifex longifolius*).

28 Botanical Subjects. Series III. Ten prints.

Illustrating Australian acclimatised night-flowering Cacti (*Cereus grandiflorus*, *C. chalybæus*, and *C. nitens*), photographed by the exhibitor in the Perth and Adelaide Botanical Gardens.

29 Botanical Subjects. Series IV. Twelve prints.

Miscellaneous, including Australian seaweed (*Hormoseira Banksii*), in situ and separate specimens; Australian screw-pines (*Pandanus*); Palms in the Singapore Botanic Gardens; Singapore Jungle Fern (*Gleichenia* sp.); and large Australian Fringed Violet (*Thysanotus dichotoma*).

30 Botanical Subjects. Series V. Thirteen prints.

British Ferns, photographed in their indigenous growth-sites. The central print, No. 7, is slightly enlarged on "Glossy velox" paper. Nos. 6 and 9 have been taken as stereoscopic subjects.

31 Australian and Miscellaneous Scenery. Series I. Seven prints.

Including characteristic views taken in the Adelaide and Brisbane Botanical Gardens, and in the Barron River district, North Queensland.

32 Australian and Miscellaneous Scenery. Series II. Nine prints.

Typical views taken by the exhibitor at Macassar and Penang, Malay Archipelago, and in the colonies of Tasmania, North Australia, and Western Australia.

(The following are Bromide, Carbon, or Collotype enlargements.)

33 Selected Corals from the Australian Great Barrier Reef.

34 Great Barrier Reef Series—Madrepore Islet.

35 Great Barrier Reef Series—Madrepore Lagoon.

36 Great Barrier Series—Warrior Island Reef.

37 Great Barrier Series—Stagshorn Coral Reef.

38 Great Barrier Series—Skull Reef.

39 Great Barrier Series—Low Woody Reef.

- 40 Great Barrier Series—Crescent Reef, No. 1.
- 41 Great Barrier Series—Crescent Reef, No. 2.
- 42 Natives of King's Sound, Western Australia.
- 43 Festal Dance, or "Corroboree," of Western Australian Natives.
- 44 Native Camp, Albany Pass, North Queensland.
- 45 Australian "Moreporks," or Fern Owls.—"Darby and Joan."
- 46 Australian "Morepork," or Fern Owl (Male Bird).—"The G.O.M."
- 47 Australian "Morepork," or Fern Owl, aggressively excited.
- 48 Eagle Owl (*Bubo ignavus*).
- 49 Eagle Owls. A "Family Party."
- 50 Nest Mounds of White Ants (termites), Kimberley, W. Australia.
- 51 Nest Mounds of White Ants (termites), Kimberley, W. Australia.
- 52 Nest Mounds of White Ants, Albany Pass, North Queensland.
- 53 Nest Mounds of White Ants, (meridian type), Laura Valley, Queensland.
- 54 Nest Mounds of White Ants (meridian type), Laura Valley, Queensland.
- 55 Giant Sea Anemone, with "Commensal" Fish and Crab (natural size). Photographed from life, through the water.
- 56 Australian Jelly Fish. Photographed from Life.
- 57 Newly-hatched Turtles. Their first Swim. Photographed from Life.
- 58 Spider's Web. Frost laden.
- 59 Spider's Web. Dew laden.
- 60 Australian Grass Tree (*Kingia Australis*).
- 61 Australian acclimatised Cactus (*Cereus grandiflorus*).
- 62 Water Hyacinth (*Pontederia crassipes*), Adelaide Botanic Gardens.
- 63 Water Lily Lagoon, Norman River, North Queensland.
- 64 Upper Barron River, North Queensland.
- 65 Preston River, near Bunbury, Western Australia.
- 66 Clashing Breakers, Outer Beach, Bunbury, Western Australia.
- 67 Book, "The Naturalist in Australia," containing Process and Collotype reproductions from the Exhibitor's original negatives.

MILITARY PHOTOGRAPHY.

This includes photographs taken at the seat of war for other than military purposes, balloon photography, photographic surveying and kindred applications.

- 1 Crimean War. Inside the Redan, by Roger Fenton. Sydney Keith.
- 2 Crimean War. Two panoramic views of Sebastopol, by Roger Fenton. Sydney Keith.
- 3 Model of Woodbury's Balloon Camera. A. L. Henderson.
The camera, with the necessary apparatus and four prepared plates, weighs about twelve pounds. Just above the lens, attached to a slide that can be drawn out, is the revolving disc, worked by a spring, which will give four or more revolutions—one each time the catch is released—by means of a small electro magnet; in the upper part of the camera is a drum holding four plates; this also has a spring, causing it to revolve each time it is released, one quarter of its circumference, and so to bring another plate into position. The whole is suspended from a balloon.
- 4 Woodbury's Balloon Camera. A. L. Henderson.
This is the full sized camera, a model of which, attached to the balloon, forms the previous exhibit.
- 5 Pigeon Post Film. Royal Photographic Society.
Part of a collodion film containing messages sent out of Paris during the siege by means of carrier pigeons. From 20 to 30 complete films, equal to 320 to 480 pages as shewn, formed the usual load for a pigeon; the whole weighed less than 15 grains.
- 6 Military Photographs. Royal Photographic Society.
Presented to the Collection by the Rev. H. Gordon Palmer. These photographs were taken by Mr. Palmer and others between 1858 and 1860, the paper being prepared and sensitised at the Institution at Woolwich Arsenal. The Armstrong gun is a photograph of the first produced.
- 7-8 Balloon Photographs of Philadelphia. W. N. Jennings.
- 9 War Photographs. Royal Photographic Society.
A volume of photographs taken by Roger Fenton in the Crimea, during the spring and summer of 1855.
- 10 Frame of Sixteen Photographs. The Proprietors of "Black and White."
Taken by Mr. Rene Bull during the Græco-Turkish War.
- 11 Frame of Twelve Photographs. The Proprietors of "Black and White."
Taken by Mr. Rene Bull during the Indian Frontier War.

- 12 Radiograph. The Proprietors of "Black and White."
Taken during the Indian Frontier War, of a soldier's arm, showing the bullet.
- 13 Stereoscopic Modelling of Clouds. John Tennant.
1 Cumulus. Base 200 yards.
2 The same cloud, 15 mins. later. Base 200 yards.
3 Clouds. Base 500 yards.
4 Incipient Cumulus. Base 600 yards.
- 14 Stereoscopic Modelling of Mountains, Rocks, John Tennant.
and Glaciers.
1 The Rothhorn (Limestone) from the Niederhorn, Base 50 yards.
2 The Mittaghorn and Egginerhorn, from Mellig. Base 150.
3 The Mittaghorn and Egginerhorn, from the South-East. Base 100 yards.
4 The Mittaghorn, from Eurgsta'den. Base 60 yards.
5 The Laquinhorn, from Mellig. Base 200 yards.
6 The Mischabelhorn, from the Fee Valley. Base 300 yards.
7 The Fee Glacier, from the Valley. Base 100 yards.
8 Schist blocking the Fee Ravine. Natural fracture, aerial weathering.
9 Schists on the flanks of the Ravine. *Reches moutonnées.*
N.B.—The base in the rock photography is only roughly estimated.
- 15 A Bridges-Lee Photo-Theodolite, 1897 Pattern, J. Bridges-Lee.
for Surveying by Aid of Photography.
1897 Pattern for Surveying by aid of Photography.
- 16 Photographs taken with the Bridges-Lee Photo- J. Bridges-Lee.
Theodolite, 1897.
- 17 A Bridges-Lee Surveying Camera, 1894 Pattern. J. Bridges-Lee.
- 18 Photographs taken with the Bridges-Lee Sur- J. Bridges-Lee.
veying Camera, 1894 Pattern.
The first Photographs taken with the original experimental instrument.
- 19 Lantern Slides, Prepared from the Earliest J. Bridges-Lee.
Negatives, taken with the 1897 Instru-
ment, which includes Tangent Scale
and Memorandum Tablets.
- 20 Balloon Photographs, taken near Halifax, School of Military
N.S., by Major Elsdale, R.E. Engineering.
- 21 Balloon Photographs taken near Alder- School of Military
shot by Captain Mantell, R.E. Engineering.
- 22 Photographs of an Explosion of a Land School of Military
Mine, taken at Chatham by Royal Engineering.
Engineers.

Telephotographs.

The Italian Minister of War, Field Photographic Section, 3rd Engineers, Commandant, Captain Mario Moris.

- 1 Panorama of Rome, taken from Monte Mario. Enlargement 12 diameters.
 - 2 Rome, taken in the neighbourhood of Monte Cavo. Distance 28 km. Enlargement 50 diameters.
 - 3 Panorama of Castel-Gandolfo, taken from Monte-Cavo. Distance 9 km. Enlargement 50 diameters,
 - 4 View of Rocca-Priora, taken from Monte Cavo (Rome). Distance 4 km. Enlargement 50 diameters.
 - 5 View of Ponte Molle, taken from Monte Mario (Rome). Distance 2,500 km. Enlargement 58 diameters.
 - 6 View of Ponte Molle, taken from Monte Mario (Rome). Distance 2,500 km. Enlargement 100 diameters.
 - 7 View of Ariccia, taken from Monte Cavo (Rome). Distance 8,500 km. Enlargement 00 diameters.
 - 8 View of St. Peters, the Vatican dome, taken from Monte Mario (Rome). Distance 2,250 km. Enlargement 40 diameters.
 - 9 View of Frascati, taken from Monte Mario (Rome). Distance 23 km. Enlargement 40 diameters.
 - 10 View of Tivoli, taken from Monte Mario (Rome). Distance 30 km. Enlargement 40 Diameters.
-

Department of the Interior, Dominion of Canada.

Topographical Surveys Branch, Ottawa.

(E. Deville, Surveyor General.)

- 1 & 2 The Survey Camera.
 - 3 The Transit Theodolite.
 - 4 Surveyor and Assistant.
 - 9 to 13 Nine Survey Photographs, original size.
 - 14 to 22 Nine Mapping Enlargements.
 - 23 to 27 Maps.
 - 28 Plan of the Survey Camera.
-

Photo-chemical Laboratory, Royal Technical College,

Berlin-Charlottenburg.

- 1 & 2 Architectural view with Telephotographic lens with comparison picture, by Prof. A. Raschdorff.
- 3, 4 & 5 Telephoto pictures with comparisons, by P. Hannecke.
- 6 & 7 Telephoto picture with a bromide enlargement (4 times linear).
- 8, 9 & 10 Architectural Telephoto views with comparison pictures, by Prof. A. Raschdorff.

PHOTO-MICROGRAPHY.

Three-colour Collotype Photo-Micrographs are shown in the section on "Photography in Colours."

1 Photo-Micrographic Apparatus. T. Charters White.

2 Eighteen Photomicrographs. R. L. Maddox, M.D.

- 1 Diatom. *Gyrosigma formosum*, natural size, length $\frac{1}{1600}$ inch, from three negatives—wet collodion, $\frac{1}{2}$ th dry objective; achromatic condenser, plain mirror, sunlight; printed on albumenised paper, circa 1865.
- 2 Diatom. *Pleurosigma angulatum*. Wales' dry $\frac{1}{2}$ th objective and amplifier, part of Dubosc's solar microscope and mirror as condenser, sunlight, collodion wet plate $\times 3000$, circa 1867. Recent print, bromide paper.
- 3 Diatom. *Gyrosigma strigosum*. $\frac{1}{2}$ th dry objective, achromatic condenser, plain mirror, sunlight, collodion wet plate, \times omitted; albumenised paper, circa 1865.
- 4 Diatom. *Corsinodiscus*, showing double structure in broken valve. $\frac{1}{2}$ th dry objective, achromatic condenser, plain mirror, sunlight, wet collodion, \times omitted; albumenised paper, circa 1865.
- 5 Animal. Fresh blood of Newt, *Triton cristatus*, showing change in the nucleus of the blood corpuscle, Beck's $\frac{1}{2}$ th objective, achromatic condenser, plain mirror, sunlight, collodion wet plate, \times omitted; albumenised paper, circa 1866.
- 6 Nerves, vessels, pigment corpuscles, etc., in skin of young Tadpole. Beck's $\frac{1}{2}$ th objective, achromatic condenser, plain mirror, sunlight, \times omitted collodion negative 1872, object mounted in liquid; printed recently bromide paper.
- 7 Nerve plexus in mesentery of young Frog. Beck's $\frac{1}{2}$ th objective, achromatic condenser, sunlight, \times omitted, collodion wet plate, object mounted in fluid, negative 1872; printed recently, bromide paper.
- 8 Insect. Scale of *Podura*, *Lepidocyrtus cucicollis*. Wales's $\frac{1}{2}$ th dry objective and amplifier, achromatic condenser, heliostat, mirror, sunlight, collodion wet plate, \times omitted; beaded structure supposed to be due to an inner framework of the scale; albumenised paper, 1867-68.
- 9 Foot of House Fly. Beck's $\frac{2}{3}$ rd objective corrected actinically, achromatic condenser, sunlight, collodion wet plate, \times omitted; albumenised paper, circa 1864.
- 10 Sycamore Leaf Insect. Beck's $\frac{2}{3}$ rd objective, used as in No. 9, collodion wet plate, \times omitted; albumenised paper, circa 1868.
- 11 Parasite of Sheep, Sheep Tick. *Ixodes reduvius*. Beck's $\frac{2}{3}$ rd objective, used as in No. 9, collodion wet plate, \times omitted; albumenised paper, circa 1868.

- 12 Parasite of Mole, *Talpa Europæa*. Beck's $\frac{3}{8}$ rd objective, used as in No. 9, collodion wet plate; albumenised paper, 1866-67.
 - 13 Parasite of Seal. Baker's old $1\frac{1}{2}$ inch objective, Kellner eye piece stopped down, with pale bright green glass colour screen used as sub-stage condenser, and a small condenser next to paraffin lamp. 1 inch wick, Gelatino bromide plate, $\times 20$; solio paper, 1898.
 - 14 Parasite of Honey Bee. Baker's 1 inch old objective, used as in No. 13; Gelatino bromide plate, $\times 30$; solio paper, 1898.
 - 15 Bacteria, *Spirillum* and convoluted chain bacteria from Duck's excrement after eight months' culture. Gundlack's water im. $\frac{1}{14}$ th, achromatic condenser, paraffin lamp, 1 inch wick; Gelatino bromide plate, 1891, $\times 460$; solio paper, 1898.
 - 16 *Spirillum* from Ducks excrement, culture of two days. Leitz $\frac{1}{12}$ th hom. im., Achromatic condenser, paraffin lamp, 1 inch wick; Gelatino bromide plate, 1891, $\times 460$; solio paper, 1898.
 - 17 A small Parasite from Brittle Star, *Ophiocoma neglecta*; Beck's $\frac{3}{8}$ rd objective corrected actinically, one half of the objective masked alternately, (Wenham's plan); Abraham's achromatic prism, sunlight, collodion stereo wet plate. Photographed and printed on albumenised paper, 1862, for the Stereoscope.
 - 18 A Young Brittle Star. Beck's $\frac{3}{8}$ rd objective with Lieberkuhn speculum and plain mirror, bright daylight, collodion wet plate, printed on albumenised paper 1862, $\times 20$. Seen as an opaque object.
 - 19 & 20 Photograph of drawings of objects found in the jelly mass lining the top and sides of the main sewer, Liverpool, 1871. Collodion wet plate, albumen paint.
-
- 3 Spinal Cord of Cat. $\times 40$. E. J. & H. Spitta.
Cervical region. Photographed with Dallmeyer photomicrographic lens, 1.75 focus at $f/16$, and enlarged by the exhibitors.
 - 4 Female Garden Spider. $\times 20$. E. J. & H. Spitta.
Zeiss "Planar" lens at $f/16$, and enlarged by the exhibitors.
 - 5 Arachnoidiscus Erhenberghii. $\times 1,800$. E. J. & H. Spitta.
Zeiss $\frac{1}{2}$ -inch apochromatic N.A. .65, and No. 6 projection eyepiece, and enlarged by the exhibitors.
 - 6 One Frame, consisting of 12 Test Objects. E. J. & H. Spitta.
Proboscis of Blow Fly. $\times 70$.
Zeiss apochromatic 1-in., N.A. .73, Projection ocular 6. Test object for 1-in. and $\frac{1}{2}$ -in. The suctorial tubes and minute hairs should look sharply defined. In a well corrected objective there ought to be no woolly or fluffy appearance of the black rings surrounding the large collecting tubes, and no milkiness visible over the whole picture. Zeiss achromatic condenser N.A. .95.
Polyxenus Lagurus. $\times 400$.
Hair of "Pencil-tail," Zeiss $\frac{1}{8}$ th apochromatic, N.A. .95. Projection ocular 6. Two different planes of focus. A test object for $\frac{1}{4}$ and $\frac{1}{8}$ th objectives,

to display the presence or absence of colour in the objective. It is also used to test the errors of centring. On rotating the object a well centred objective will give a uniformly colored image throughout. Powell & Lealand dry apochromatic condenser N.A. '95.

Pleurosigma angulatum. $\times 2,700$.

Zeiss apochromatic $\frac{1}{4}$ th. N.A. 1'40. Projection ocular 6, and subsequently enlarged. There are three planes of focus in this diatom, which give rise to three appearances: (a) Beads in regular intervals; (b) White excavations surrounded by black hexagonal markings; (c) Dark dots on a white background. This photograph was taken at *b*. Powell & Lealand, dry apochromatic condenser N.A. '95.

Podura Scale (*Lepidocyrtis curvicolis*). $\times 1,000$.

Zeiss $\frac{1}{4}$ th apochromatic. N.A. 1'40. Projection ocular 6. This test object is used for $\frac{1}{4}$, $\frac{1}{2}$, $\frac{1}{2}$ in. objectives, for the purpose of examining the chromatic corrections of the objective. With axial illumination, an achromatic condenser, and a moderately closed diaphragm, the markings should look well punched out and clearly defined with an almost entire absence of colour. This can only be achieved by the use of apochromatics of the highest order, and even these will sometimes show a faint trace of colour. The white streak in the "note of exclamation," as better seen in the accompanying enlargement, should be plainly visible, with a narrow pinch near the summit of the broadest part, whilst the apex should be prolonged, some distance in the black. Powell and Lealand's dry apochromatic condenser N.A. '95.

Navicular Rhomboides. $\times 700$ and 1,200.

Apochromatic Zeiss $\frac{1}{4}$ th N.A. 1'40, Projection ocular 6. Powell & Lealand's dry apochromatic condenser N.A. '95.

Amphipleura Pellucida. $\times 2,300$.

Photographed direct in white light with Zeiss apochromatic $\frac{1}{4}$ th N.A. 1'4 ocular 27, from a specimen prepared in realgar by Dr. Van Heurck. The striae in this specimen are about 1-70,000 in. apart. Powell & Lealand's dry apochromatic condenser N.A. '95.

Surirella Gemma. $\times 2,300$.

Photographed direct in white light with Zeiss apochromatic $\frac{1}{4}$ th N.A. 1'4 ocular 27. The transverse striae resolved into Beads are about 2,000 to the millimetre, or 50,000 to the inch. Powell & Lealand dry apochromatic condenser N.A. '95. This diatom is an excellent test to ascertain if the chromatic and spherical aberrations have been well corrected in objectives of the highest power. Only the best apochromatics give an uncoloured image.

Coscinodiscus asteromphalus. $\times 2,000$.

Showing secondary markings. Zeiss $\frac{1}{4}$ th apochromatic N.A. 1'4 projection ocular 6. Nelson's F line screen. Powell & Lealand dry apochromatic condenser N.A. '95.

Minute Hairs of Blow Fly.

Photographed to show how without "critical light," false diffraction images are produced around small objects. The condenser is too low in Fig. 9, and correctly adjusted in Fig. 10, which gives an image of the object as it ought to appear. Zeiss $\frac{1}{4}$ th, apochromatic N.A. '95. Projection ocular 6. Zeiss achromatic condenser N.A. '95.

Bacillus Tuberculosis in Sputum. $\times 1,000$.

Zeiss $\frac{1}{4}$ th apochromatic N.A. 1.40 projection ocular 6. Powell & Lealand dry apochromatic condenser N.A. .95.

Bacillus Typhi abdominalis with Flagella. $\times 1,000$.

Stained by Löffler's method. Powell & Lealand $\frac{1}{12}$ in., apochromatic N.A. 1.43. Projection ocular 6. Powell & Lealand dry apochromatic condenser N.A. .95.

7 Twenty-two Photomicrographs.

Richard Smith.

Blossom of Wheat.

- 1 Stigma and Anthers. $\times 12$.
- 2 Stigma and Anthers. $\times 26$.
- 3 Part Stigma. $\times 52$.

- 4 and 5 Beardlets of Wheat. $\times 30$. (These are for drying the germ end of the berry in the same way that the hairs of the beard dry the other end.)

Wheat Bran.

- 6 Outer skin of Bran. $\times 60$.
- 7 Middle skin of Bran. $\times 60$.
- 8 Inner skin of Bran. $\times 60$.

Wheat Germ.

- 9 Vertical Longitudinal Section. $\times 38$. (Shows germination just beginning).
- 10 Horizontal Longitudinal Section. $\times 25$.
- 11 Transverse Section. $\times 25$.
- 12 Core of Wheat Berry. (Analagous to core of apple.) $\times 70$.

Wheat Bran.

- 13 Vertical Section. $\times 400$.
- 14 Oblique Section. $\times 70$.
- 15 Endosperm of Wheat. (With most of the starch washed out to show the gluten.) $\times 300$.
- 16 Indian Wheat Berry, in section showing the larva of a weevil.

Wheat Straw.

- 17 to 22 Sections to close under the ear from the first knot. $\times 20$. (18 shows the flag round the straw before the flag has unfolded.)

8 Photomicrographs by Dr. Edward Leaming. Royal Photographic Society.

- 1 Hippocampus, stained by the Golgi method. $\times 30$ diameters. (Platinum.)
- 2 Spider Cells, stained by the Golgi method. $\times 190$ diameters. (Platinum.) (Medal.)
- 3 Nerve Cell in anterior horn of spinal cord, stained by the Golgi method. $\times 190$ diameters. (Platinum.)
- 4 Bipolar Ganglion Cells, stained by the Golgi method. $\times 29$ diameters. (Platinum.)

- 5 Pyramid Cells, stained by the Golgi method. $\times 190$ metres. (Cold bath Platinum.)
- 6 Nerve Cell, in spinal cord, stained by the Golgi method. $\times 190$ diameters. (Platinum.)
- 9 Photomicrograph, by Dr. Edward Leaming, of New York. Royal Photographic Society.
Purkinje Cell, stained by the Golgi method. $\times 190$ diameters. (Platinum.)
- 10 Two Frames of Photomicrographs. Edward M. Nelson, P.R.M.S.
Magnifications varying from 950 to 7800 diameters.
- (A) Eight photomicrographs of Diatoms.—Two of them, *Aulacodiscus Kittonii* and *Arachnoidiscus Japonicus*, are whole diatoms, and were taken by an apochromatic 1 inch objective of 0.3 N.A., the camera being $6\frac{1}{2}$ feet long. The remaining six are portions of diatoms taken with an apochromatic $\frac{1}{8}$ of 1.43 N.A. Two of these, viz., *Pleurosigma Angulatum* and *Triceratium Favus*, show the "postage stamp" fracture. The *Auliscus Racemosus* is that of the "process" only, which exhibits the hitherto unknown "sieve" like structure on the top.
- (B) Eight photomicrographs, seven of which are Diatoms.—One of the latter, *Auliscus Rhipis*, is a whole diatom. This was taken with an apochromatic $\frac{1}{8}$ of 1.43 N.A., a low-power eye-piece and a short camera. This should be compared with the *Aulacodiscus* and *Arachnoidiscus* in Frame A. The six others are portions of diatoms all taken with the above $\frac{1}{8}$, with higher magnifications. That of *Euphyllodium Spathulatum* exhibits an elaborate and hitherto unknown structure. That of *Isthmia Nervosa* var: is of interest on account of the peculiar structure between the areolations. The photomicrograph of the hair of *Polyxenus* was taken with an apochromatic $\frac{1}{4}$ of 0.95 N.A.
- 11 Frame of Photomicrographs. Albert Norman, L.R.C.P. & S.
Bacillus Anthracis. $\times 500$
Bacillus Anthracis. $\times 1,000$
Proteus Vulgaris. $\times 500$
Proteus Vulgaris. $\times 1,000$
- 12 Frame of Photomicrographs. Albert Norman, L.R.C.P. & S.
Bacillus Subtilis Spores. $\times 1,500$
Bacillus Mycoides. $\times 1,000$
Cladothrix. $\times 1,000$
Malaria Crescent. $\times 1,000$
- 13 Frame of Photomicrographs. Albert Norman, L.R.C.P. & S.
Parasites in Rabbit's Blood. $\times 1,000$
Typhoid Bacillus, showing Flagella. $\times 1,000$
Proteus Vulgaris, showing Flagella. $\times 1,000$
Bacillus Coli Communis, showing Flagella. $\times 1,000$

- 14 Frame of Photomicrographs. Albert Norman, L.R.C.P. & S.
 Lymphangioma of Tongue.
 Colloid Carcinoma of Pylorus.
 Hooklets of Echinococcus.
 Tar Molluscum.
- 15 Frame of 18 Photomicrographs. J. T. Holder.
 Tr. sec. Stem of Maretail (*Hippuris vulgaris*). $\times 18$.
 Tr. sec. Fertile Head of *Equisetum arvense* (Spores in situ). $\times 10$.
 Tr. sec. Ovary of *Rhododendron ponticum*. $\times 14$.
 Mildew on stem of Wheat (*Puccinia graminis*). $\times 50$.
 Tr. sec. Leaf of *Psamma arenaria*. $\times 8$.
 Tr. sec. Rachis of Bracken (*Pteris aquilina*). $\times 10$.
 Plumose Antennae of Male Gnat (*Culex pipiens*). $\times 23$.
 Tongue, etc. of Honey Bee (*Apis mellifica*). $\times 18$.
 Vert. sec. of eye of Dragon Fly (*Libellula vulgaris*). $\times 26$.
 Legs of Water-Bug (*Nancoris cimicoides*). $\times 10$.
 Tr. sec. of Worm (*Ascaris lumbricoides*). $\times 11$.
 Head of *Cysticercus* of Hare. $\times 40$.
 Vert. section. Foot-pad of Cat, showing a pacinian corpuscle. $\times 27$.
 Vert. sec. Tongue of Rabbit. $\times 23$.
 H. sec. Human Scalp. $\times 30$.
 Vert. sec. Human Scalp. $\times 9$.
 Vert. sec. Human Parietal Bone. $\times 28$.
 Section. Human Kidney. $\times 18$.
- 16 Frame of 6 Photomicrographs. J. T. Holder.
 Scales from Leaf of Olcaster (*Eleagnus longipes*). $\times 50$.
 Spiny "Plant" Bug, from Ceylon (*Tingis hystricellus*). $\times 18$.
 Marine Polyzoa (*Aetea anguinaria*), growing on algæ. $\times 25$.
 Group of Diatoms and Sponge spicules. $\times 75$.
 Diatoms (*Isthmia enervis*), growing on algæ. $\times 55$.
 Anchor and plates of *Synapta galliennei*. $\times 35$.
 Dark Ground Illumination.
- 17 Photo-micrographs of Micro-organisms, Edwd. C. Bousfield.
 and Photographs of cultivation of same. L.R.C.P. Lond.
- 18 Photo-micrographs of various objects, chiefly Edwd. C. Bousfield.
 to illustrate the exhibitor's method of L.R.C.P. Lond.
 reproducing unlevel objects by successive
 exposures in different planes.
- 19 Eight Photographs, in pairs, showing, under W. J. Bishop.
 direct rays and polarized rays, the follow-
 ing substances :—
 Foraminated shells.
 Salicin.
 Platino cyanide of potassium.
 Chloride of gold.

- 20 Set of Photographs. 7/6 Ernest Jones.
- 21 Bee's Tongue $\times 36$ diameter. 5/6 Ernest Jones.
Enlarged on Nikko paper from $\frac{1}{4}$ -plate.
- 22 Stem of Villarsia Nymphoides $\times 30$ diameters. 5/6 Ernest Jones.
- 23 Stem of Lime Tree, magnified 27 diameters. 5/6 Ernest Jones.
- 24 Photomicrographs of Diatoms.
Photochemical Laboratory of the Royal Technical College, Berlin.
By E. Vogel.
- 25-27 Three Frames of Photomicrographic Lantern Slides. F. Iles.
- 28-29 Two Frames of Lantern Slides showing some of the F. Iles.
tones obtained in ordinary photographic transparencies by development with Chrysotone and toning with "Glaucotone."
- 30-31 Enlargements (Photomicrographs.) F. Iles.
- 32 Forty Photo-Micrographic Lantern Slides. T. Charters White.
- 1 Circumvallate papillæ of Tongue. $\times 36$.
 - 2 Horizontal section of Tooth of Myliobatis. $\times 90$.
 - 3 Rectal papillæ of Blow-fly. $\times 50$.
 - 4 Section of Stomach of Dog. $\times 36$.
 - 5 Parasite of Bat. $\times 25$.
 - 6 Horizontal section of Dental Exostosis. $\times 122$.
 - 7 Epithelioma of Tongue. $\times 37$.
 - 8 Chimney Sweep's Cancer. } Showing a comparison of the rela-
9 Section of Bone. $\times 90$. } tive sizes of the cells.
 - 10 Red silky Earth Mite. $\times 12$.
 - 11 Leptus autumnalis. Harvest Mite. $\times 72$.
 - 12 Leisoma palmicinctum, one of the Acari. $\times 40$.
 - 13 Developing Tooth of foetal Kitten. $\times 25$.
 - 14 Section of Human Liver (healthy). $\times 60$.
 - 15 Section of Drunkard's Liver. $\times 60$.
 - 16 Arachnoidiscus. Diatom. $\times 225$.
 - 17 Heliopelta. Diatom. $\times 216$.
 - 18 Obisium. $\times 18$.
 - 19 Vertical section of Eye of Dragon-Fly. $\times 43$.
 - 20 Vertical section through Taste Goblets in Rabbit's Tongue. $\times 25$.
 - 21 Tentacles of Acorn Barnacles. $\times 12$.
 - 22 Nycteribia, Parasite of Fishing Bat of Trinidad. $\times 14$.
 - 23 Flea of Mole. $\times 12$.
 - 24 Vertical section of Human Skin. $\times 36$.
 - 25 Vertical section of Finger of Infant. $\times 18$.
 - 26 Section of Echinus Spine. $\times 30$.
 - 27 Section of Stomach of Frog. $\times 12$.
 - 28 Comb and Brush of House Ant. $\times 156$.

- 29 *Daphnia pulex*. Water Flea. × 72.
- 30 Salivary Glands, with Gizzard and Crop of *Pulex irritans*. × 43.
- 31 Parasite of Fowl. × 37.
- 32 Section of Sea Grass. *Psamma arenaria*. × 25.
- 33 Vertical section of Tooth of Hake. × 25.
- 34 Spicules of various Silicious Sponges. × 20.
- 35 Section of Kidney of Rabbit. × 72.
- 36 Leaf-bud of Potamogeton. × 12.
- 37 *Chelymophra phyllofera*, Green-Fly of Sycamore Tree. × 156.
- 38 Foot of Spider. × 90.
- 39 Tongue of Bee. × 18.
- 40 Vertical section of Tadpole. × 12.

33 Photomicrographs.

F. H. Evans.

Lantern Slides.

- 1 Human. Blood (for white corpuscles). × 385.
- 2 Human. Ossifying cartilage. Transverse section, × 56.
- 3 Human. Ossifying cartilage. Longitudinal section, × 92.
- 4 Human. Voluntary muscle. × 385.
- 5 Human. Scalp (for glands, etc.). Vertical section, × 28.
- 6 Human. Scalp (for hair follicles). Vertical section, × 44.
- 7 Human. Eye, healthy, from living subject. × 3.
- 8 Eye of Drone Fly (section showing rods and cones). × 132.
- 9 Eye of Water Beetle (*Dytiscus marginalis*). × 132.
- 10 Section through Yolk of Egg. × 12.
- 11 Section of Deal (for discs, etc.). × 132.
- 12 Diatoms in situ (*Licmophora flabellata*). × 102.
- 13 Diatom (*Heliopelta metii*). × 132.

Dark-ground illumination.

- 14 Polyzoa. (*Bicellaria ciliata*). × 11.
- 15 Polyzoa. Coralline (*Acarmarchis plumosa*). × 12.
- 16 Echinus Spines. Transverse section, × 15.
- 17 Echinus Spine. Transverse section, × 29.
- 18 Echinus Spine. Transverse section, × 27.
- 19 Starfish, young (central portion). × 14.
- 20 Eggs of Moth. × 11.
- 21 Eggs of Moth. × 22.
- 22 Antenna of Vapourer Moth. × 12.
- 23 Cirrhi of Barnacle. × 16.
- 24 Foraminifera. (Group.) × 18.
- 25 Foraminifera. (Siliceous casts.) × 16.
- 26 Foraminifera. (*Operculina amonoides*). × 23.
- 27 Foraminifera. (*Quinqueloculina excavata*). × 27.
- 28 Polycistina. (Group.) × 24.
- 29 Polycistina. (Group.) × 28.
- 30 Polycistina. (Group.) × 35.

34 A frame containing a series of Photomicrographs, dealing with the Anatomy of the Spine.

Albert Londe.

35 Complete Photo-Micrographic Apparatus.

Carl Zeiss.



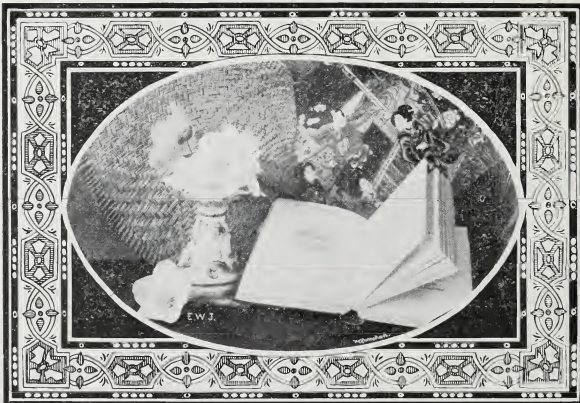
Photography in Colours.

- 1 Lippmann Photograph. Royal Photographic Society.
One of the earliest results obtained by Professor Lippmann by his process of colour photography, exhibited by Dr. Lindsay Johnson at a meeting of the Royal Photographic Society, 1891.
- 2 Photographs in Colour by Lippmann's process. Prof. G. Lippmann.
- 3 Photographs in Colour by Lippmann's process. A. Lumière.
- 4 Colour Photograph. Leon Vidal.
Two impressions by Niepce de Victor, on plate prepared with the violet subchloride of silver (1860).
- 5 Chromotypographic proof, by Cros. Leon Vidal.
From a picture by Aime Millet, 1882, 3 colours.
- 6 Three-colour Collotypes. Leon Vidal.
Proofs in photocollotype, by Quinsac from negatives by Ducos du Hauron.
- 7 Carbon Print. Leon Vidal.
In 3 colours, from negatives, by Ducos du Hauron.
First proof of the kind obtained upon paper, 1869.
- 8 Fancy Carbon Print. Leon Vidal.
In 3 colours, 1873.
- 9 Impression in colours. Leon Vidal.
By photography direct in colours, by Emmanuel Vallot, 1890.
- 10 Three Direct Photographic prints in colour by Leon Vidal.
Carl Veress.

- | | | |
|----|--|-----------------------------|
| 11 | Three-colour Print in Carbon, by Chaupe of Toulouse. | Leon Vidal. |
| 12 | Three Photochromes (1875). | Leon Vidal. |
| 13 | One Woodburytype print for one of the above Photochromes. | Leon Vidal. |
| 14 | Chart of the three kinds of Chromoscopic radiations and synthesis. | Leon Vidal. |
| 15 | Chart like the preceding, applied to another subject. | Leon Vidal. |
| 16 | Chart of Chromoscopic Vision. | Leon Vidal. |
| 17 | Two Photocollotypes.
Three-colour prints of a chromolithograph, and of decomposition into 3 black monochromes, 1895. | Leon Vidal. |
| 18 | Four Chromotype prints in 3 colours.
By Messrs. Delaye L. Hemmerle of Lyons, 1897. | Leon Vidal. |
| 19 | Two Chromotypes (3 colours).
By Prieur of Paris, 1898. | Leon Vidal. |
| 20 | One Chromotype, in three colours
Geisler of Raon L'Etapes, 1898. | Leon Vidal. |
| 21 | Colour Photographs.
By the process of Franz Veress, of Transylvania. A number of experimental examples of ages varying from four to six years. As these were all the inventor's experiments, the fixing, which is a lengthy process, was in most cases very insufficiently done. Hence they are not exposed in full light, though they have been exposed in the light of ordinary rooms for many hours on various occasions since their production ("Photogram," May, 1897, pp. 147 and 148). | The Photogram, Ltd. |
| 22 | An application of the Three-Colour Process to Rapid Newspaper Printing.
These half-tones were made by introducing the screen, as a detached negative film, between the colour record negatives and the sensitized metal plates. This method of three-colour half-tone work does away with the usual intervening positives. The highest lights are thus obtained pure white, which is necessary with three-colour work in fast newspaper printing. These prints are on the paper used for Sunday newspapers. The method includes a fourth plate in black, grey, or brown ink. The process was worked out by the exhibitor in 1896. | S. H. Horgan. |
| 23 | Three-colour Photo-micro Collotypes.
Produced by Dr. Leaming of New York. Section of Enchondroma of Ilium, $\times 30$ diameters. Section of Purulent Myositis $\times 190$ diameters. | Royal Photographic Society. |

- 24 Three-colour Prints. Portrait from Royal Photographic Society.
half-tone Process Block.
(a.) The yellow impression.
(b.) The red impression.
(c.) Red and yellow combined.
(d.) The blue impression.
(e.) The final result.
- 25 Three-colour Collotypes. Royal Photographic Society.
Produced in 1894 by Weissenberger at the Russian State Paper Printing
Office, St. Petersburg.
- 26 Three-Colour Photomicrograph Royal Photographic Society.
Collotypes. By Dr. E. Leaming,
of New York.
- 27 Three-colour Chromotypography. The Photogram, Ltd.
Photographic Selection Process.
1 The Italian Shepherd, by the Photochromatic Printing Co., Belfast.
One of the earliest examples produced in the British Isles.
2 Eight examples of carpet reproductions by the Colombian Engraving
and Electrotyping Co., Chicago.
3 Examples of Commercial applications of the Process, by the Photo
Coloritype Co., Chicago.
4 Five examples by various American engravers.
5 Six examples by the National Chemigraph Co., St. Louis, Mo.
- 28 Chromotypography. Four or more Print- The Photogram, Ltd.
ings. (Hand Selection, or Stopping-
out Process.)
1 Reproduction by Hare & Co., giving four separate workings and com-
plete print on same sheet, with original.
2 Reproduction in six printings, giving separate printings and completed
proof. Blocks by Hare & Co.; printed by Raithby, Lawrence & Co.
3 Reproduction in six printings, giving all separate printings, and each of
the successive stages of superposition to the complete print. Blocks
by Hare & Co.
4 Reproductions in four printings. Example 'by Bohrer, Gorter & Co.,
Munich.
5 Reproductions in five printings. An example by John Swain & Son.
- 29 Chromo-Collotype. The Photogram, Ltd.
1 Three early examples. A Conservatory and The Hunting Scene are
the earliest examples published in England, printed by Waterlow &
Sons, Ltd. The Holy Family is one of the earliest published in
America, by the New York Photogravure Co.
2 Two early examples, reproduced from water-colour drawings by the
Photochromatic Co., Belfast. (Company now extinct.)
3 Three examples, by Bohrer, Gorter & Co., Munich.
4 Examples by Bohrer, Gorter & Co., Munich.
5 Three sheets carpet designs by Edward Bierstadt, New York.

- 30 Chromo-Collotype, in more than three colours. Landscapes by Bohrer Gorter & Co., Munich. The Photogram, Ltd.
- 31 Chromo-Lithography, Partly Photographic and Partly Hand Selection. The Photogram, Ltd.
1. Examples by Gillot, of Paris.
 2. Examples from bookbindings in the British Museum by Walter Griggs, of Peckham.
- 32 Three-colour Print by Ducos du Hauron.
Photo-mechanical Laboratory, Royal Technical College, Berlin-Charlottenburg
- 33 Three-colour Print by J. Albert.
Photo-mechanical Laboratory, Royal Technical College, Berlin-Charlottenburg.
- 35-44 Three-colour Prints on H. W. Vogel's principle.
Photo-mechanical Laboratory, Royal Technical College, Berlin-Charlottenburg.
- 45 Three-Colour Lantern Slides. Prof. J. J. Thomson.
The original slides prepared by Clerk Maxwell to illustrate his paper upon colour before the Royal Institution.
- 45 Three-Colour Prints. E. J. Wall.
A series of prints by three-colour process, details as to which are given on the prints themselves.





Photography as a Science.

- 1 Leonhard Weber's Opal Glass Plate Photometer. Schmidt & Haensch.
With Lummer-Brodhun's prism combination and tables of constants. It is portable, and suited for the measurements of flames, etc., and for diffused light.
- 2 Lummer-Brodhun's additions to Photometer. Schmidt & Haensch.
For adjusting the illuminated surfaces to equality.
- 3 The same for the Adjustment of Illuminated Surfaces to Equality and Contrast. Schmidt & Haensch.
Both these additions are constructed according to the instructions of the German Government Physical and Technical Institute, and are used in it. They can be applied to any correct photometric bench without further treatment.
- 4 Direct Vision Pocket Spectroscope. Schmidt & Haensch.
With prisms made from Jena glass and adjustable slit.
- 5 The same, with Comparison Prism, for the Observation of Two Spectra. Schmidt & Haensch.
- 6 The same with Scale, Spectrum and Scale being adjustable together. Schmidt & Haensch.
- 7 Vogel's small Spectrograph. Schmidt & Haensch.
Consisting of a photographic camera and direct-vision spectroscope.

8 Miscellaneous Examples.

Chapman Jones, F.I.S., F.C.S.

- 1 Negative showing the effect of intensification by mercuric chloride followed by ferrous oxalate, up to four times.
- 2 Plate showing the effect of intensification by mercuric chloride followed by ferrous oxalate, repeating the process with and without intermediate or subsequent treatment with mercuric chloride and sodium sulphite.
- 3 Plate showing that by repeated treatment with mercuric chloride and sodium sulphite the density is decreased.
- 4 Plate showing the effect of shortening development and getting sufficient density by intensification. This also demonstrates the gradual production of detail during development, as, by stopping development, the four or five lowest squares, in the one case, have not been developed at all. Both plates received the same exposure.
- 5 Plate showing that, with pyrogallol and hydroquinone, the stain that remains after a thorough washing is unaffected by any of the ordinary clearing baths. A bath containing ferrous sulphate darkens the stain left by hydroquinone. Eikonogen gives no stain not removable by washing. The peculiar corrosive action of hydroquinone on gelatine, that is its tendency to cause frilling, is clearly shown.
- 6 Plate showing that stains due to pyrogallol, hydroquinone, and eikonogen are removed more quickly by washing with plain water than with either alum or alum and hydrochloric acid, and that a dilute solution of caustic soda is better than either.
- 7 Treatment of a platinum print that has turned yellow, showing that a mixture of chlorine water and dilute hydrochloric acid restores the original colour, but that neither alum nor potassium binoxalate has the same effect.
- 8 Prints showing that dilute hydrochloric acid and chlorine water have no action on the image of platinum prints.
- 9 Platinum print yellowed by sulphuretted hydrogen restored by a mixture of hydrochloric acid and chlorine water, the acid alone having little or no effect.
- 10 Negative of a row of equidistant candle flames illustrating the effect of a simple lens (7 inches focal length) with a diaphragm in front and behind respectively. Towards the edges of the plate the image is displaced in the first case towards the centre of the plate, and in the other case from the centre. These effects are commonly called curvilinear distortion.

9 Camera fitted with Direct Vision Spectro-
scope for Photo-Spectroscopy.

Col. J. Waterhouse.

10 A Sensitometer.

A. L. Henderson.

Designed by the Exhibitor for giving to plates a regular series of exposures increasing in a definite ratio. The principle will be seen to be the same as the Mucklow-Spurge and Vogel Sensitometers.

11 **An Opacity Meter.** Chapman Jones, F.I.C., F.C.S.

"Photographic Journal," Dec., 1895. Made to exhibitor's design by Messrs. Baird & Tatlock. The advantages claimed are (1) that it is compact and convenient, (2) only one light is required, and variations in it do not affect the readings, (3) high densities are read with special facility. The two beams of light are obtained, one directly and the other by reflection by means of three mirrors.

12 **A Print Meter.** Chapman Jones, F.I.C., F.C.S.

("Photographic Journal," Nov., 1896.) Used for measuring the proportion of light reflected from various parts of photographic prints. Only one light is necessary, and variations in it do not affect the readings. The light should have a circular flame or incandescent surface, and is placed against the V-shaped screen, and two beams are obtained by two mirrors. The illumination of the comparison square is reduced by increasing the path of the beam of light, by drawing the moveable mirror back, until it matches the part of the print being tested.

13 **Apparatus used in connection with Hurter and Driffield's system of Quantitative Photography and of testing plates.** Walter L. Bourke.

- 1a Revolving disc for making a series of exposures on the strip of plates to be tested. (Each consecutive exposure is doubled).
- 1b Dark slide for revolving disc. The standard candle is placed at a distance of 1 metre from the plate. The disc is in this instance revolved by means of a small water motor.
- 2a Photometer with duplex lamps for measuring the densities due to the several exposures.
- 2b Examples of test strips.
- 2c Diagrams illustrating the method of plotting the densities and deducing the speeds.

In place of the standard candle, an amyl acetate lamp, or a Pentane Argand gas burner is now found to be preferable, but whichever light be adopted, it must be carefully standardized to the candle, which still remains the standard. In place of the grease spot, the Lummer Brodhun indicator, which greatly facilitates reading, has been adopted as an improvement.

- 3a Hurter and Driffield's Actinograph.
- 3b The Hurter and Driffield Photographer's note book for field use with the above.

14 **Photo-chemical Laboratory, Royal Technical College Berlin-Charlottenburg.**

- 1 Spectra of the sun with ordinary and with azaline plates by H. W. Vogel.
- 2 Spectra of stained bromide of silver plates by H. W. Vogel.
- 3 Spectra of the sun with ordinary and with eosin stained plates by H. W. Vogel.
- 4-6 Copies with ordinary and azaline stained plates of an original oil painting by H. W. Vogel.

- 7, 8 Views of Starnberg, taken with ordinary and with eosin silver plates
by J. B. Obernetter.
- 9 Views of Starnberg, taken with ordinary and with eosin silver plates by
J. B. Obernetter.
- 15 Photographs of the Spectrum. Capt. W. de W. Abney, C.B.
Taken on various dry plates, showing also the methods of measuring the
sensitiveness at different parts.
- 16 Shutter Diagrams by Photography. Capt. W. de W. Abney, C.B.
- 17 An Abney Screen for Measuring Capt. W. de W. Abney, C.B.
Opacity of Negatives.
- 18 Examples of the Variation of the Capt. W. de W. Abney, C.B.
Sensitiveness of a plate.
According to the intensity of the light acting, and of the temperature
of exposure.
- 19 Sensitometer for Orthochromatic Capt. W. de W. Abney, C.B.
Work.
- 20 Sensitometer for Three-colour Capt. W. de W. Abney, C.B.
Work.
- 21 Phosphorescent Actinometer. L. Warnerke.
To measure actinic intensity of light.
- 22 Standard Sensitometer. L. Warnerke.
To measure the sensitiveness to light of the photographic preparations.
- 23 Integral Actinometer. L. Warnerke.
To measure the actinic quantity of light by the quantity of carbonic acid
evolved from the salts of iron.
- 24 Colour Screens and Spectrum. E. Sanger Shepherd.
Selected from a series made for the purpose of preparing an Atlas of the
absorption of various colouring matter suitable for modifying the action of
light on photographic plates, and recording their relative fastness to light,
under given conditions of protection.
- 25 A new form of Adjustable Slit for Spectro- E. Sanger Shepherd.
scopes, specially adapted for Photo-
spectroscopes.
- 26 Photographs illustrating the Range of E. Sanger Shepherd.
Gradations and Comparative Sensitive-
ness of various commercial brands of
Colour Sensitive Plates to White and
Monochromatic Light

- 27 Spectrum Photographs illustrating the E' Sanger Shepherd.
Colour Sensitiveness of various brands
of Commercial Colour Sensitive Plates.

- 28 The first Photometer constructed, with which V. C. Driffield.
all measurements involved in Messrs.
Hurter & Driffield's original research
were made.

The two lamps, ordinary duplex paraffin, are not sent. It will be noted that the taper sliding scale originally suggested for the right-hand end of the Photometer has been discarded for diaphragms, which were found to be preferable.

- 29 An early Exposing Apparatus, used before V. C. Driffield.
simultaneous exposures were made with
the Revolving Disc.

- 30 Five examples of Speed Determinations pro- V. C. Driffield.
duced with this apparatus.

- 31 Dr. Hurter's Actinometer for measuring diffuse V. C. Driffield.
daylight.

The three examples shown are different early experimental forms of this instrument. They are now valueless, except as curiosities; the indicating liquid in the syphon tubes having been dissipated in the bulbs. Owing to the difficulty of transportation, it has not been possible to exhibit a complete and perfect instrument, of which only about six exist.

- 32 Three Sheets of Diagrams produced by this V. C. Driffield
Actinometer.

A self-recording arrangement, showing the fluctuations in diffuse daylight throughout the day for the months of January, March, and June. A study of these diagrams led to the construction of the "Actinograph."

- 33 An early form of the Actinograph. V. C. Driffield.

It will be noted that the scale indicating the rapidity of the plate is marked with the inertia, its inverse; this speed being adopted subsequently.



THE PRINCE OF WALES' HOSPITAL FUND. THE ROLL OF MINISTERING CHILDREN.

Messrs. F. & R. Speight, 178 Regent Street, W.

Photographs of all the Royal Children in England, specially photographed for the Roll. This will consist of Portraits of the first 100,000 children who possess the Hospital Stamp Album, with the 1897 stamps affixed therein. The record, when complete, will be offered to the Prince of Wales.



Books Illustrated with Photographs.

(*Historical Section.*)

- | | | |
|-----|---|-----------------------------|
| 466 | Teneriffe, by Piazzi Smythe. | William Lang. |
| | A book illustrated with stereoscopic silver prints. Published 1858. | |
| 467 | Virgil. | William Lang. |
| | Published by Firmin-Didot. Paris, 1858. Illustrated with silver prints. | |
| 468 | The Photographic Art Annual, | Royal Photographic Society. |
| | 1859. | |
| | Issued in parts, each of which was known as the "Photographic Art Journal." It was illustrated with silver prints. The letterpress was not of a technical nature. | |
| 469 | Palestine in 1860. | William Lang. |
| | Illustrated with silver prints from negatives taken by albumen process by John Cramb. Rev. Robert Buchanan, D.D. | |
| 470 | Sinaï and Palestine Photographed. | William Lang. |
| | Francis Frith. | |
| 471 | Ruined Abbeys and Castles of Great Britain. | William Lang. |
| | Illustrated with silver prints. Wm. and Mary Howett, 1862. | |
| 472 | Art. | William Lang. |
| | With Heliotype illustrations, 2 volumes. 1870-71. | |
| 473 | Studies from Nature, 1876. | Royal Photographic Society. |
| | This may be taken as a fair specimen of the numerous works which appeared in the seventies, illustrated by means of Woodburytypes. | |



General Technical Photography and Process Work Exhibits.

The numbers refer to the Screens and Alcoves.

No. 115. Photographic Records and Surveys.

Loan Collection.

THE NATIONAL PHOTOGRAPHIC RECORD ASSOCIATION.

SIR J. BENJAMIN STONE, M.P., President.

G. SCAMELL, 21 Avenue Road, Highgate, Secretary.

By Sir J. B. Stone, M.P.

- 1 The Royal Throne, House of Lords.
- 2 House of Lords, from the Bar.
- 3 House of Commons, from the Speaker's Chair.
- 4 Cloisters, House of Commons.
- 5 Cloister Court.
- 6 Elizabethan Fire Place.
- 7 Princes' Chamber, House of Lords.
- 8 No. 15 Committee Room.
- 9 Royal Robing Room.

- 10 Library, House of Lords.
- 11 The Terrace, House of Commons.
- 12 Manuscript Prayer Book.
- 13 The Right Honourable J. Chamberlain.
- 14 The Right Honourable A. J. Balfour.
- 15 The Right Honourable Gerald W. Balfour.
- 16 The Right Honourable G. J. Goschen.
- 17 The Late Right Honourable A. I. Mundella.
- 18 Sir Edward Clarke.
- 19 Sir Wilfrid Lawson.
- 20 The Late Sir Frank Lockwood.
- 21 Henry Labourchere.

By Harold Baker.

- 22-23 Hill Croome Church, Worcestershire.
- 24-25 Shobdon Priory, Herefordshire.
- 26 Cross, Cropthorne Church, Worcestershire.

By S. B. Bolas.

- 27 Old Bell Inn, Holborn.
- 28 South Aisle, St. Bartholomew, Smithfield.
- 29 Rehere's Tomb.

By R. Welch.

-
- 30 Toorybrenell, Inishmurry, Sligo.
 - 31 Altar, or Cursing Stones, Inishmurry, Sligo.
 - 32 Mevagh Cross, Rosapenna, Donegal.

By Mr. and Mrs. Snowden Ward.

'(Paintings from Guild Chapel, Stratford-on-Avon.)

- 33 St. George and the Dragon.
- 34 Martyrdom St. Thomas A Beckett.
- 35 Dream of the Empress Helena.

- 36 Testing the True Cross.
 - 37 Resurrection of the Just.
 - 38 Resurrection of the Unjust.
-

- 39 15th Century Font, Norwich Cathedral.
- 40 Font, Blickling Church, Norfolk.
- 41 Font, Snitterfield Church, Warwick.
- 42 Font, Luddington Church, Warwick.
- 43-44 Shakespeare's Birthplace, 1858. (Negative by H. P. Robinson.)
- 45 Old Houses, Stratford-on-Avon.

By E. Scamell.

- 46-51 London Street Hawkers.

By B. Diveri.

- 52 Coxton Tower, near Elgin.
- 53 Elgin Cathedral.

By George Scamell.

- 54 Cathedral, from Lady Chapel, Wells.
 - 55 Entrance to Cloisters, Wells.
 - 56 Entrance to Bishop's Palace, Wells.
 - 57 Nether Hall, Roydon.
 - 58 Roman Bath, Bath.
 - 59 Glastonbury Abbey.
-

PHOTOGRAPHIC SURVEY OF WARWICKSHIRE.

C. J. FOWLER, Honorary Secretary, Court Mount, Erdington, Birmingham.

By C. S. Baynton.

- 1 Warwick Castle, from River Avon.
- 2 Warwick Castle, The Keep.
- 3 Warwick Castle, Interior of Great Hall.
- 4 Warwick Castle, Interior of Great Hall.

- 5 Warwick Castle, Corner of Great Hall.
- 6 Warwick Castle, The Red Room.
- 7 Warwick Castle, The Cedar Room.
- 8 Warwick Castle, Pictures in Cedar Room.

By P. T. Deakin.

- 9 Brinklow Church, north porch, South Warwickshire.
- 10 Brinklow Church, west door, South Warwickshire.
- 11 Butler's Marston, Well South Warwickshire.
- 12 Shotteswell, Cottages, South Warwickshire.
- 13 Honington, lopping willows, South Warwickshire.
- 14 Stretton-on-Fosse, South Warwickshire.
- 15 Church Tysoe, cottages, South Warwickshire.
- 16 Church Tysoe, cottages, South Warwickshire.
- 17 Stretton-on-Fosse, cottages, South Warwickshire.
- 18 Halford, cottages, South Warwickshire.
- 19 Windmill, Marton, South Warwickshire.
- 20 Windmill, Marton, South Warwickshire.

By C. J. Fowler.

- 21 Aston Hall, east front.
- 22 Aston Hall, south wing.
- 23 Aston Hall, main entrance.
- 24 Aston Hall, broken staircase.
- 25 Aston Hall, fireplace, great gallery.
- 26 Charlecote House, river front.
- 27 Charlecote House, from park.
- 28 Charlecote House, garden terraces.
- 29 Charlecote House, front entrance.

By W. T. Greatbatch.

- 30 Aston Hall, the Great Hall.
- 31 Aston Hall, Dick's Garret.

- 32 Aston Hall, kitchen fireplace.
- 33 Aston Hall, old coffer.
- 34 Butler's Marston, cottage, South Warwickshire.
- 35 Wellesbourne Hastings, South Warwickshire.
- 36 Halford Mill, South Warwickshire.
- 37 Mollington, hauling timber.

By F. Lewis.

- 38 Knowle Church, south side.
- 39 Knowle Church, curious vane.
- 40 Christ Church, Birmingham, from New Street (being demolished).
- 41 Christ Church, Birmingham, from Paradise Street (being demolished).
- 42 Windmill, Bentley Heath.
- 43 Windmill, near Knowle.

By B. Moore.

- 44 Windmill, Olton, north side.
- 45 Windmill, Olton, south side.
- 46 Church Tysoe, South Warwickshire.
- 47 Church Tysoe Church, South Warwickshire.
- 48 Barcheston Church, South Warwickshire.
- 49 Barcheston Church, old stone Sundial.

By T. Taylor.

- 50 Brinklow, Tumulus and Roman camp.

AFFILIATED SOCIETIES. Loan Collection.

(On Screens in the North Nave.)

- 1 North Middlesex Photographic Society.
 - 1 Left by the Tide. £1 11/6. A. J. Golding.
 - 2 "'Tween the gloaming and the mirk." J. McIntosh.
 - 3 The Landing Place. J. C. S. Mummery.
 - 4 The fringe of the Moor. H. Smith.
 - 5 Cold dreary Winter. £1 11/6. H. Stuart, Jun.
 - 6 The deserted Mill. £1 11/6. S. E. Wall.

2 Chiswick Camera Club.

- 1 A winding Stream. H. Goertz.
- 2 Homeward Bound. H. Gentry.
- 3 Frost and Mist. T. Noyse.
- 4 Solitude. W. E. Walker.
- 5 A quiet Pool. E. N. Pearce.
- 6 ——— John A. Hodges.

3 Exeter Camera Club.

- 1 Solitude. A. E. Berg.
- 2 "I hear the ripple washing in the reeds." Rev. J. Sparchatt.
- 3 Entrance to Fisherman's Cottage, Covelly. Miss Fruscott.
- 4 The Matterhorn. J. Fiarce.
- 5 On the Exe. J. W. Huggins.
- 6 A cloud that gathered shape. Rev. J. Sparchatt.

4 Borough Polytechnic Photographic Society.

- 1 End of a Stormy Day. J. Jones.
- 2 A Devonshire Weir. F. W. Bannister.
- 3 Waning Winter. A. Bedding.

5 Weymouth and District Camera Club.

- 1 Garden Scene. John Bull.
- 2 Garden Scene. John Bull.
- 3 A Tangled Path. J. G. Rowe.
- 4 By Bye-ways and Hedges. J. G. Rowe.
- 5 A fresh North Wester. F. C. Mare.
- 6 A Dorset Village. F. C. Mare.
- 7 Evening. F. C. Mare.

6 Rotherham Photographic Society.

- 1 Cloud Studies. G. T. M. Rackstraw.
- 2 The Porter's Lodge, Hardwick Hall. R. H. Law.
- 3 A Quiet Chat (Fishermen). Miss Mary A. B. Crossley.
- 4 Athelstane's Keep, Conisboro. James Leadbeater.
- 5 Glen Maye, Isle of Man. Alfred S. Lyth.
- 6 A Court, Robin Hood's Bay. H. C. Hemmingway.

7 Bradford Photographic Society.

- 1 In the Gloaming. A. Keighley.
- 2 In the Freshet. M. Surface.
- 3 Study of Trees, Hirst Wood. F. Nicholson.
- 4 Among the Gorse. F. Nicholson.
- 5 The Road to Nowhere. P. Elland.
- 6 Church-door, Kirkby Lonsdale. Ezra Clough.

8 Woolwich Photographic Society.

- 1 A Snug Harbour, Torquay. C. H. Imrie.
- 2 Winter. H. J. Spencer.
- 3 Sunset, Sea and Sand. F. W. Machen.
- 4 A Woodland Scene in Spring. R. J. Redding.
- 5 South Choir Aisle, Wells. W. H. Dawson.

9 Richmond Camera Club.

- 1 Hall in "Casa de Pilatos," Seville. F. P. Cembrano.
- 2 A Misty Morning. F. P. Cembrano.
- 3 Low Tide on the Thames. C. Ardaseer.
- 4 Sunset, Richmond. P. Ennis.
- 5 " Twickenham "
- 6 Siena, after Sunset. C. H. Davis.
- 6 A Lane in Somerset. C. H. Davis.

10 Wakefield Photographic Society.

- 1 Whitby. W. Holmes.
- 2 The Gloomy Naerdale. H. M. Briggs.
- 3 ——— R. Robson.
- 4 Fountain Abbey. Major Norwood.
- 5 Child Study. Dr. Clarke.
- 6 Study of Head. Dr. Clarke.

11 Birmingham Photographic Society.

- 1 The Day was nearly Done. W. Smedley Aston.
- 2 Bolton Abbey. C. S. Baynton.
- 3 "Thy weak eye glimmers thro' a misty veil." J. P. Croft.
- 4 Entrance to an old Guild Hall. C. J. Fowler.
- 5 A Sea Mist. W. T. Greatbatch.
- 6 An Elizabethan Fireplace. E. Underwood.

12 Sheffield Photographic Society.

- 1 Lunch Time. Ernest Beck.
- 2 Loading Sand. T. G. Hibbert.
- 3 In Groudie's Glen. Geo. Tomlinson.
- 4 Hazy Morn. Geo. W. Blackwell.
- 5 South Walsham, Norfolk. Sparham Camp.
- 6 Eventide. J. H. Lygo.

13 Monklands Photographic Society.

- 1 Hallowe'en. J. W. Eadie.
- 2 Finishing Touches. J. W. Eadie.
- 3 The Spiritualist. R. C. Platt.
- 4 Our Provost. R. C. Platt.
- 5 Learn Young, Learn Fair. J. Skeil.
- 6 Among the Barley Rigs. W. B. Hossack.

14 Putney Photographic Society.

- 1 Trafalgar Square. F. T. Beeson.
- 2 On Barnes Common. H. Faulkner.
- 3 A Passing Cloud. W. F. Gorin.
- 4 Strand on the Green. John A. Hodges.
- 5 Break of the Frost. Wm. Martin.
- 6 "Tide and Tide, and 'tween the Tides." W. C. Plank.

15 Newcastle-on-Tyne and Northern Counties Photographic Association.

- 1 Foggy Day on the Tees. W. Parry.
- 2 Sunshine and Smoke. E. G. Lee.
- 3 Seabird's Nest. Jno. Watson.
- 4 Edward Corder, Esq. W. S. Corder.
- 5 Wreck of the Luna. G. Hastings.
- 6 Holywell Dene. B. Graham.

16 Derby* Photographic Society.

- 1 Dovedale.
- 2 Weston-on-Trent.
- 3 Monsal Dale.
- 4 Roseoff.
- 5 Old Moreton Hall.
- 6 Kedliston.

17 Southport Social Photographic Club.

- 1 The Eyes of the Soul. C. F. Depree.
- 2 The End of the Day. Helen Fielden.
- 3 The Evening Meal. Holland J. Heaton.
- 4 Evening on the Beach, Bordigera. C. H. Brown.
- 5 Chrysanthemums. E. W. Johnson.
- 6 Good Night. Marian Wall.

18 Woodford Photographic Society.

- 1 A Suffolk Road. H. Wilmer.
- 2 Hastings. H. T. Malby.
- 3 A Yarmouth Row. E. Noble.
- 4 Capital in Canterbury Cathedral. E. Marriage.
- 5 From dim recesses of the Woods. J. T. Ashby.
- 6 'Twixt Day and Night. F. G. Emler.

19 Chichester Photographic Society.

- 1 Launching the Life-Boat. W. Scorer.
- 2 In the Valdoe. G. M. Turnbull.
- 3 The Cobbler. G. M. Turnbull.
- 4 From Sunny Italy. E. Thorpe.
- 5 Cowdray, near Midhurst. G. M. Turnbull.
- 6 Old Sussex Cottages. G. M. Turnbull.

20 Oxford Camera Club.

- 1 Portrait Study. Miss Acland.
- 2 Animal Study. Miss Acland.
- 3 Window at Haddon Hall. Col. Impey.
- 4 The Close of Day. W. L. Morgan.
- 5 Landscape. Claude Rippon.
- 6 Stratford-on-Avon Church. Court Cole.

21 Hull Photographic Society.

- 1 Departing Day. Fred Woollons.
- 2 Thornwick Bay, Flamborough Head. Chas. D. Holmes.
- 3 Selby Abbey, Choir. E. H. Howlett, F.R.C.S.
- 4 At Fountains Abbey. Wm. M. Lyth.
- 5 Porch, Adel Church. A. H. White.
- 6 A Bit of Old Whitby. T. J. Scott.

22 Croydon Microscopical and Natural History Club, Photographic Section.

- 1 Pip Brook, Dorking, Surrey. F. W. East.
- 2 Fancy Free. Miss G. Wills.
- 3 The Old Wherry, Norfolk Broads. A. P. Hoole.
- 4 Romsdal Horn, Norway. James Epps, Jun.
- 5 Quartering Flints. Kenneth McKean.
- 6 Nutfield Church. J. H. Baldock.

23 Brighouse Photographic Society.

- 1 Doorway, St. William's College, York. G. A. Farrer.
- 2 Castle Howard. Geo. Hepworth.
- 3 Evening on Windermere. H. P. Metcalfe.
- 4 The Wetterhorn, Grindelwald. A. H. Ormerod. 3 guineas.
- 5 An Interior, Beverley Minster. S. Ormerod.
- 6 View in Eye Wood Park, Herefordshire.

24 Ealing Photographic Society.

- 1 Greenford, Evening. Roland C. Whiting.
- 2 Old Mill, Guy's Cliff. H. Ball.
- 3 In Winter's Cold Grip. A. Richardson.
- 4 Anstey's Cove. G. Fryer.
- 5 November Drear. W. G. Wagner.
- 6 Medmenham Abbey. R. Y. Murphy.

25 Hackney Photographic Society.

- 1 Declining Day. F. E. Roofe.
- 2 A Forest Path. J. Carpenter.
- 3 Sundown. Wm. Rawlings.
- 4 Day's Dying Radiance. W. A. Hensler.
- 5 On the River Bank. Dr. Roland Smith.
- 6 In Winter Garb. W. Selfe.

26 City and Guilds of London Technical College Photographic Society.

- 1 The Seasons. £1 10/-. A. W. A. Dickens.
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- 3 Edinburgh at Dusk. Tulloch Cheyne.
 - 4 A Passing Storm. Thos. Glazebrook.
 - 5 Reflections, Killarney. T. F. Kershaw.
 - 6 Crossing the Ford. Walter Leigh.
- 28 Isle of Thanet Photographic Society.
- 1 Towing, Ramsgate. J. Savage.
 - 2 Eye of an Insect. A. Vigar.
 - 3 An Old Mulberry Tree. L. G. Hodgson.
 - 4 Ardlus, Loch Lomond. L. G. Hodgson.
 - 5 Conway Beach. P. Solly.
 - 6 Juliet, Junior. C. J. Scott.
- 29 The Aintree Photographic Society
- 1 Entrance Gate, Ince Blundell. C. H. Adking.
 - 2 A Portrait. D. J. Neill.
 - 3 A Cheshire Road. G. H. Jackson.
 - 4 Ambulatory, Abbey, Dore Church, W. B. Hellon.
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 - 6 On the River Mole. W. Fenton Frost.
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10	Wave study.	

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| 25 | A wayside chat. | 43 | Chef. |
| 26 | Picking rushes. | 44 | Italian musicians. |
| 27 | Maying. | 45 | Little Jack Horner. |
| 28 | Trespassing. | 46 | Bubbles. |
| 29 | Trespassers caught. | 47 | Little Miss Muffet. |
| 30 | An idle hour. | 48 | Needles and pins. |
| 31 | "Come along!" | 49 | A girl's head. |
| 32 | "How happy could I be with either." | 50 | Mischief. |
| 33 | Water babies. | 51 | My pug. |
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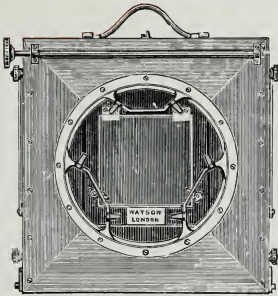
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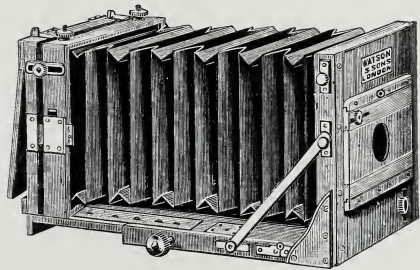
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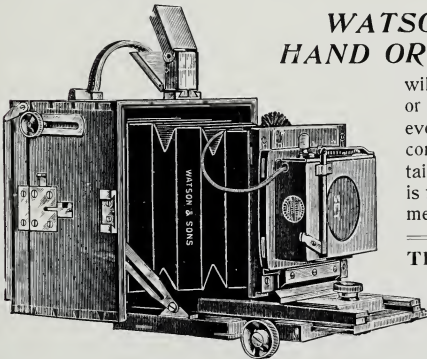
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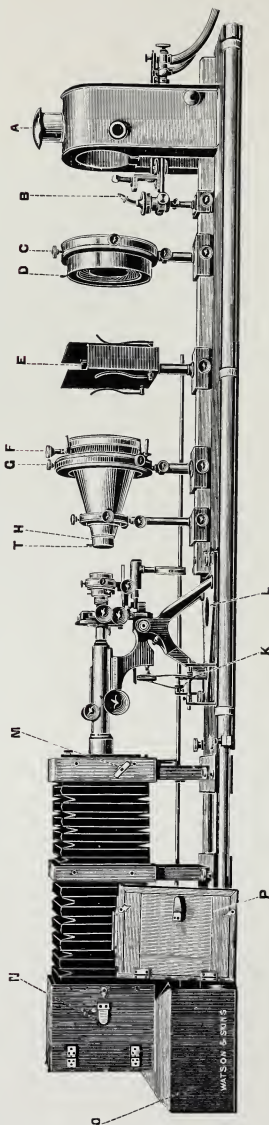
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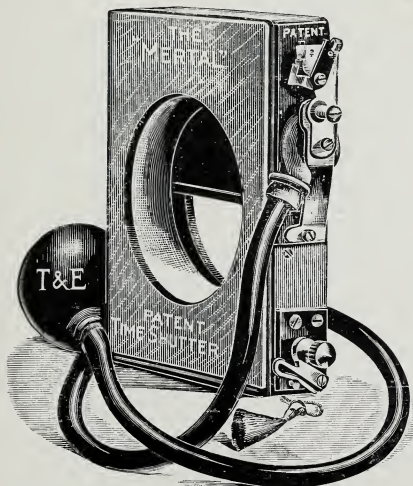
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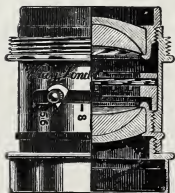
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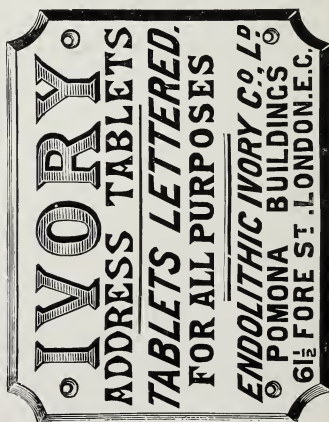
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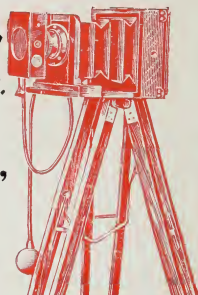
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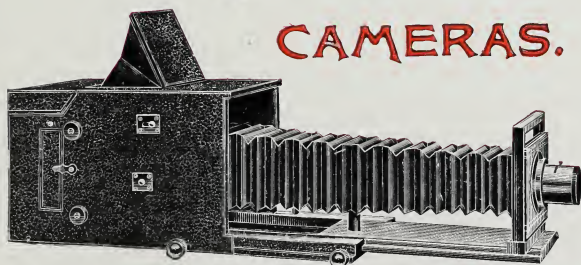
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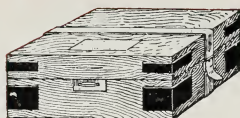
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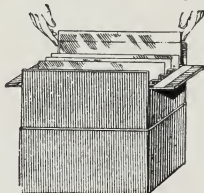
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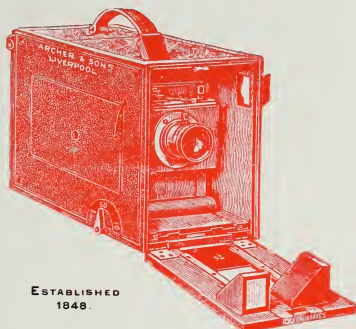
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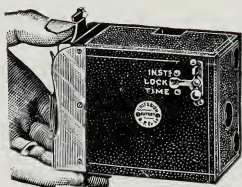
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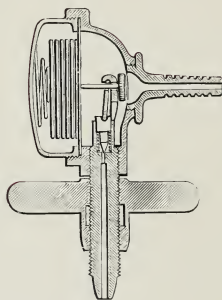
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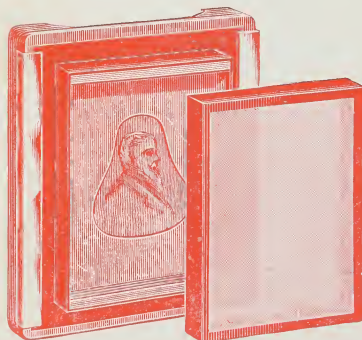
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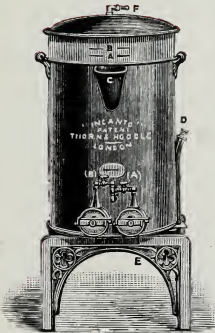
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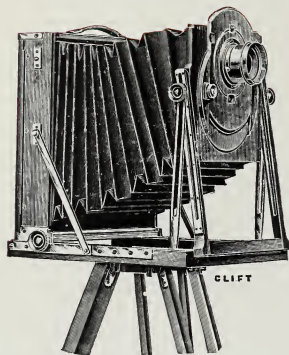
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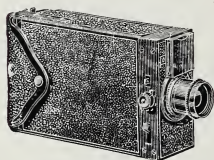
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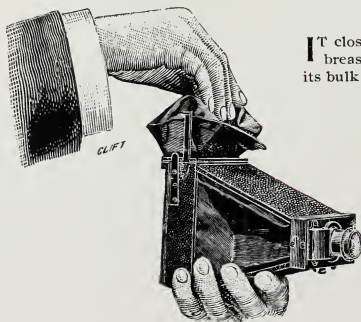


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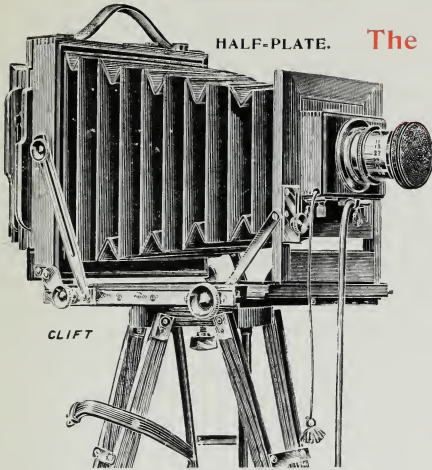
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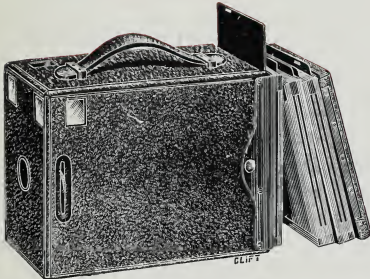
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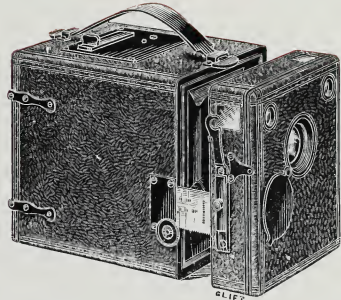
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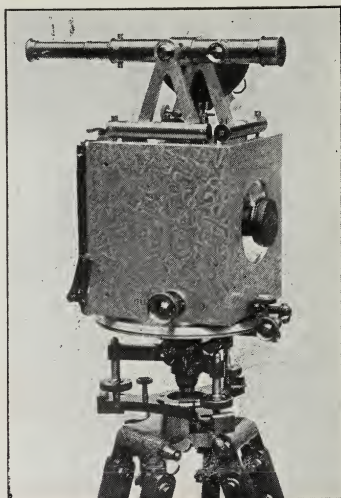
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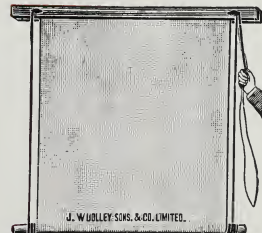
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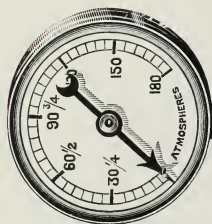
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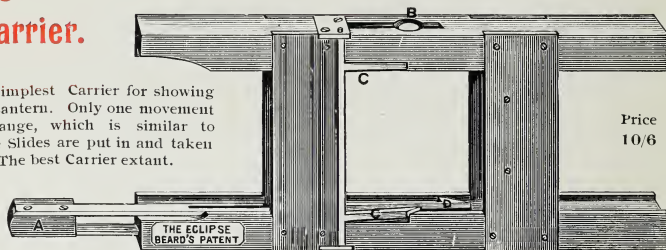
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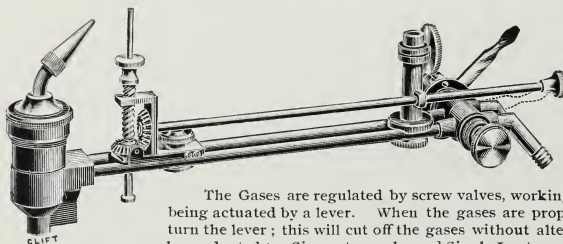
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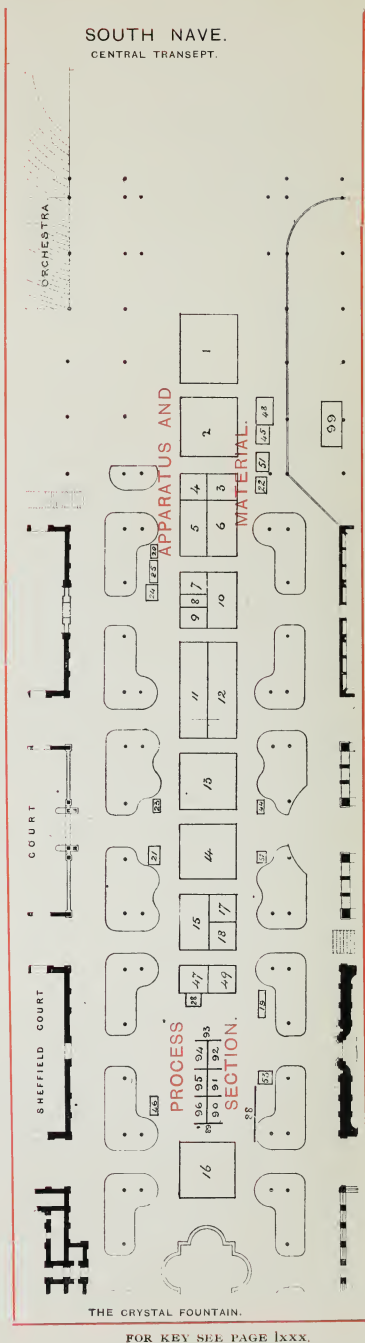
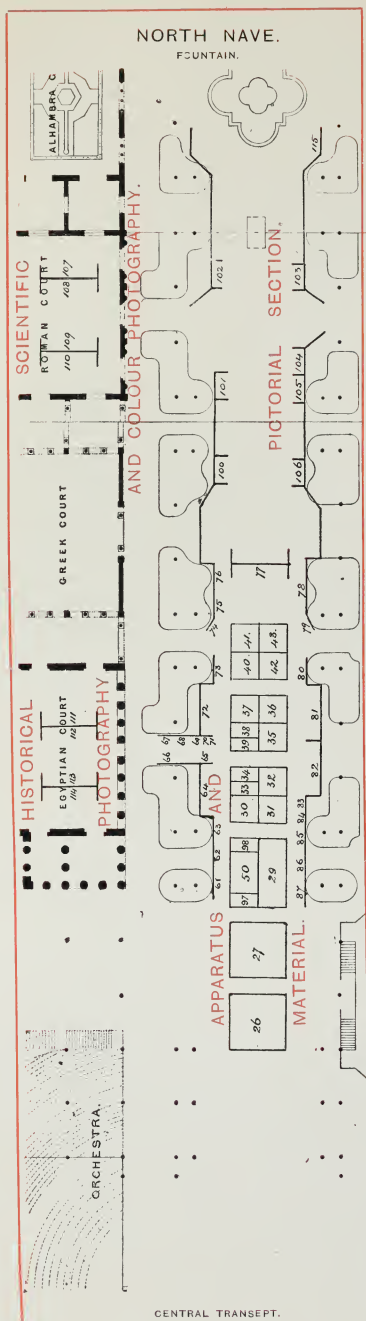
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Telegrams:
"GRAMME, LONDON."

Key to Map on p. lxxviii.

Stall No.	Exhibitor.
1.	Mawson & Swan.
2.	Marion & Co.
3.	W. Watson & Son.
4.	J. H. Dallmeyer.
5.	Elliott & Son.
6.	A. & M. Zimmerman.
7.	J. F. Shew & Co.
8.	Salmon & Son.
9.	Prestwich Manufacturing Co.
10.	Platinotype Co.
11.	Morgan & Kidd.
12.	John J. Griffin & Sons.
13.	G. Houghton & Son.
14.	Penrose & Co.
15.	Aerograph Co.
16.	Waterlow & Sons.
17.	Jules Richard.
18.	Natural Colour Photo. Co.
19.	Graphic Art Society. T. R. Gotz.
20.	York & Son.
21.	Henry Lamplough.
22.	J. H. Steward.
23.	R. W. Thomas & Co.
24.	Carter's Ink Co.
25.	C. P. Goerz.
26.	Adams & Co.
27.	R. & J. Beck.
28.	Rotary Photographic Co.
29.	Wellington & Ward.
30.	Ross.
31.	Cresco-Fylma & Hannam,
32.	J. Lizars.
33.	Prosser-Roberts Co.
34.	McKellen & Co.
35.	Iliffe & Son.
36.	Henry Greenwood & Co.
37.	Photographic News.
38.	Metallic Photo-Printing Syndicate.
39.	London Photographic Supply Co.
40.	Gutenberg Press.
41.	Percy Lund, Humphries & Co.,
42.	Photogram.
43.	Amateur Photographer.
44.	Endolithic Ivory Co.
45.	J. E. Lockyer.
46.	Sampson Low, Marston & Co.
47.	Mutascope & Biograph Syndicate.
48.	Rose & Coop.
49.	Smith's Acetylene Co.
50.	Underwood & Underwood.
51.	Perfectus Sensitized Paper Co.
52.	Gauthier Villars et Fils.
53.	W. T. P. Turner.

Screen or Alcove No.	Exhibitor.
61.	J. Thomson.
62.	Horatio Nelson King.
63.	Percy S. Lankester.
64.	J. Bulbeck & Co.
65.	Freeman Dovaston.
66.	Taber Bas-Relief Photographic [Syndicate.]
67.	Graystone Bird.
68.	Frederick Downer.
69.	Frederick Graves.
70.	F. W. Muncey.
71.	Herman Cartheuser.
72.	Autotype Co.
73.	Chancellor & Son.
74.	William F. Slater.
75.	H. Bedford Lemere.
76.	Frederick Thurston.
77.	Photographic Association.
78.	William Walton.
79.	G. K. Batten.
80.	Edward Goodwin.
81.	Harry Hallier.
82.	Walford & Co.
83.	Husnik & Hausler.
84.	Harold Baker.
85.	H. J. Haviland.
86.	Herbert Mitchell.
87.	Negretti & Zambra.
88.	Meisenbach Co.
89.	Raithby, Lawrence & Co.
90.	Typographic Etching Co.
91.	John James Bayfield.
92.	Douglas Pym.
93.	Art Reproduction Co.
94.	Strand Engraving Co.
95.	A. B. Fleming & Co.
96.	Lascelles & Co.
97.	E. D. Lavender.
98.	S. B. Bolas & Co.
99.	London County Council, Bolt [Court Technical School.
100.	J. Craig Annan.
101.	H. P. Robinson.
102.	A. Horsley Hinton.
104.	R. Demachy and C. Puyo.
105.	F. M. Sutcliffe.
106.	Lieut-Col. J. Gale.
108.	W. Saville Kent.
115.	National Photographic Record Association.

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What an Amateur Expert says.

Photo-Micrography.—In a paper read at the Camera Club by Mr. CHARTERS WHITE, M.R.C.S., in January, 1896, the author expressly mentioned that for producing the exquisite detail and gradation of light and shade in his delicate technical work then exhibited, HINTOKINONE was the developer employed.

What a Professional Expert says.

From G. E. FRANKLIN, F.R.P.S., the well-known lantern slide artist:—“Jerusalem, 12th March, 1896.—Dear Sir,—I have been using the four bottles of HINTOKINONE I had of you for developing films in Egypt during the last six weeks, and have found it work splendidly. It is such a treat to be able to carry a store of developer in such compact form for use away from home, and to find it so excellent and reliable. It is always ready, I have no waiting for something to dissolve, and it is the quickest and cleanest I ever used. The quality of the work it does is superb. No other I have ever tried is at all to be compared to it. Please send me . . . &c.—Yours truly, “G. E. FRANKLIN, F.R.P.S.”

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April 26 (Tues.)	Slides by R. B. Lodge, Esq.
" 27 (Wed.)	" John Bushby, Esq.
" 28 (Thur.)	" F. H. Evans, Esq.
" 29 (Fri.)	" F. A. Bridge, Esq.
" 30 (Sat.)	" J. A. Hodges, Esq.
May 2 (Mon.)	" John Carpenter, Esq.
" 3 (Tues.)	" Lieut.-Col. J. Gale.
" 4 (Wed.)	" J. H. Gear, Esq.
" 5 (Thur.)	" Messrs. R. Beckett & Son. "Views of Italy."
" 6 (Fri.)	" Members of Affiliated Societies.
" 7 (Sat.)	" H. Nelson King, Esq. "Royal Palaces of England."
" 9 (Mon.)	" Henry Sandland, Esq.
" 10 (Tues.)	" T. M. Brownrigg, Esq.
" 11 (Wed.)	" J. R. Williams, Esq.
" 12 (Thur.)	" Harold Baker, Esq.
" 13 (Fri.)	" Graystone Bird, Esq., and by Messrs. Newton & Co.
" 14 (Sat.)	" To be subsequently announced.

Other arrangements will be announced as soon as they are definitely fixed.

Daily: The Analyticon (Stereoscopic projection).

The following demonstrations will be given from time to time:

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Platinotype Printing and Development. By the Platinotype Co.

Half-Tone Engraving with Salts of Silver, by L. Warnerke, Esq.

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For further particulars see the Daily Programme of the Exhibition.

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